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This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

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JOHN R. ERWIN, M.D., since 1945 Medical Director of Boeing Aircraft Company, Seattle, Washington, has resigned from that position, having been granted a Fellowship with the Menninger Foundation, in connection with which he will take a residency at the Winter General Hospital in Topeka, Kansas.

THRIFT G. HANKS, M.D., has been appointed Medical Director of Boeing Aircraft Company, Seattle, Washington, succeeding DR. JOHN R. ERWIN, resigned. DR. HANKS was born in 1913; attended the University of Illinois, and graduated M.D. at the U. of I. College of Medicine in 1940. He became identified with Boeing Aircraft as an industrial physician in 1941. During the war he was absent on leave for three and a half years as a Naval Flight Surgeon, attaining the rank of Lieutenant Commander. He returned to the Boeing Medical Department in 1946 as Chief Staff Physician on a part-time basis, also maintaining a private practice in the University District. He will devote full time to his new duties as Medical Director. He is a Certified Civil Aeronautics Administration Examiner.

HENRY F. VAUGHAN, DR. P.H., Dean, School of Public Health, University of Michigan, has been appointed consultant in public health and sanitary engineering to the Air Surgeon, Air Material Command. DR. VAUGHAN was a sanitary engineer officer in the U. S. Army during World War I.

ERIC OLDBERG, M.D., Head of the Department of Neurology and Neurological Surgery at the University of Illinois College of Medicine, has been elected President of the Orchestral Association, governing body of the Chicago Symphony Orchestra. DR. OLDBERG is Consulting Neurological Surgeon for the Illinois Central and Rock Island railroads.

NATHAN MILLMAN, M.D., has been appointed Associate Director of Ortho Research Foundation's Division of Physiology and Pharmacology, Raritan, New Jersey. In 1948, at Boston, DR. MILLMAN received the IMA Cita-

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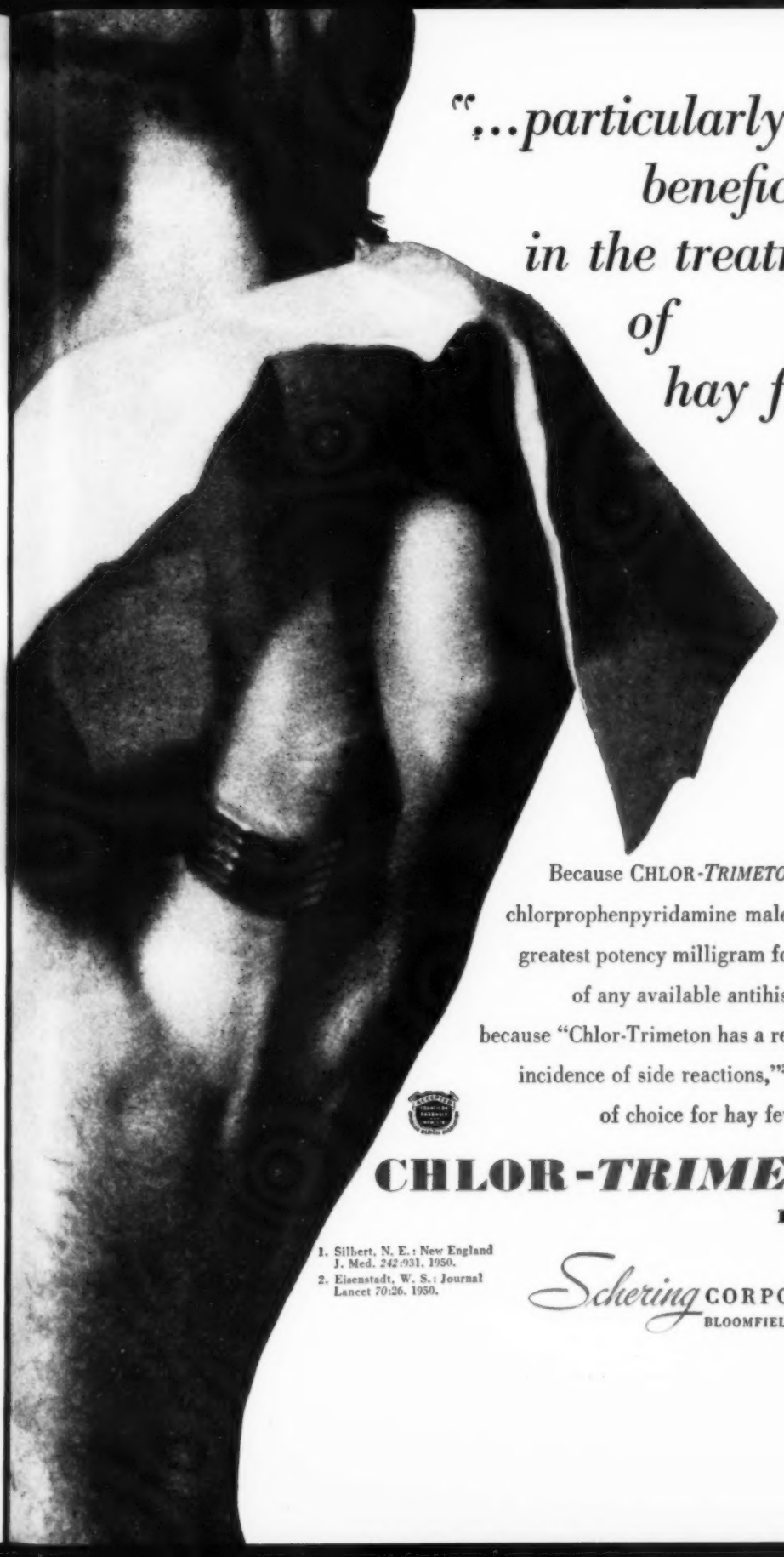

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tion for Excellence in Medical Authorship for his article entitled "Medical Departments in Small Plants—Their Layout, Equipment and Cost" (*Industrial Medicine*, 16:4, 174, April, 1947).

HERMAN D. POCOCK, JR., M.D., has been appointed Director of the Medical Department of Willard Storage Battery Company, Cleveland. DR. POCOCK was born in 1918; attended Western Reserve University; received his M.D. at the Universtiy of Cincinnati College of Medicine. He served his internship at City Hospital, and spent three years there as Resident in Internal Medicine. During the last three years he has specialized in internal medicine at the Tapco Plant of Thompson Products, Cleveland.

R. RALPH BRESLER, M.D., formerly Medical Director of Sharp and Dohme's Industrial Health Service, and recently appointed Medical Director for Bayuk Cigars, Inc., at Philadelphia, is editing the Industrial Medicine Section of the annual Service Volume to the Cyclopedia of Medicine, Surgery and Specialties published by F. A. Davis Company, Philadelphia. This Service Volume constitutes a review of all industrial medical literature throughout the year, and is a feature of the subscription to the Cyclopedia.

A. BUNSEN LERNER, M.D., lately of the Institute of Industrial Health of the University of Michigan, has resigned to become Associate Professor of Dermatology in the Medical School of the University of Oregon in Portland, serving there along with DR. THOMAS B. FITZPATRICK, recently appointed Professor of Dermatology.

WILLIAM A. SAWYER, M.D., Medical Director 30 years, and now Medical Consultant, for Eastman Kodak Company, Rochester, New York, has an article in *U.S.A., The Magazine of American Affairs* (July) entitled "Employer Health is Good Business." Here's one sentence: "I remember so well one day, in going through a relatively small factory with the company doctor, hearing him say with pride, 'Believe it or not, I've gotton to know this place so well that I think I could do any job here myself'"....

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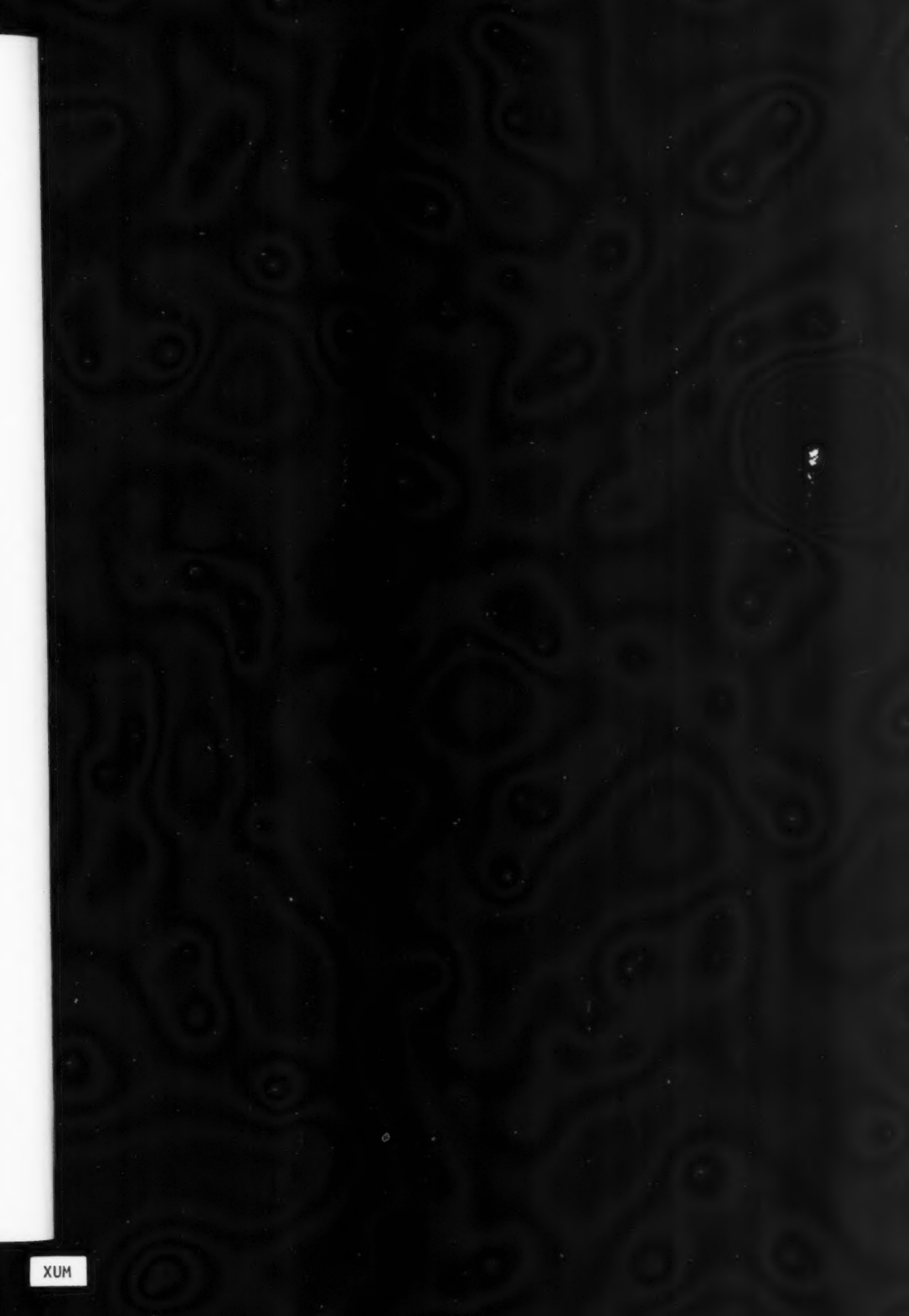

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REPRESENTATIVE JOHN PHILLIPS (R., Calif.), discussing Federal appropriations for scientific research: "I would like to raise a mild voice of inquiry as to how all the people in the past got their research work done without financial help from some government. I wonder how Darwin, Newton, Marconi, Henry Ford, Pasteur, the people who discovered penicillin, and insulin, and some of these other benefits to mankind, managed to get anything discovered without $10 million of government money. Of course .... Newton was following strictly the bureaucratic pattern, because he lay down under a tree in a position of complete inactivity and let an apple fall on him." —*U.S.A.*, July, 1952.

A NATION-WIDE study of the effect of prolonged illness on employed persons in the United States has been launched by the Research Council for Economic Security, 111 West Jackson Boulevard, Chicago. Firms representing 20 industries are currently reporting the illness experience of more than 100,000 workers. The survey will gradually be expanded to cover at least 500,000 employed persons in every region throughout the country; it will require two years to complete.

Recent Deaths

STANLEY J. SEEGER, M.D., 63, June 20, in New York, after a brief illness. DR. SEEGER was born at Manitowoc, Wisconsin, in 1889; graduated M.D. at Northwestern University Medical School in 1911; interned at Michael Reese Hospital, Chicago, 1911-13; had post-graduate training at Mayo's, 1915-17; began his practice as a

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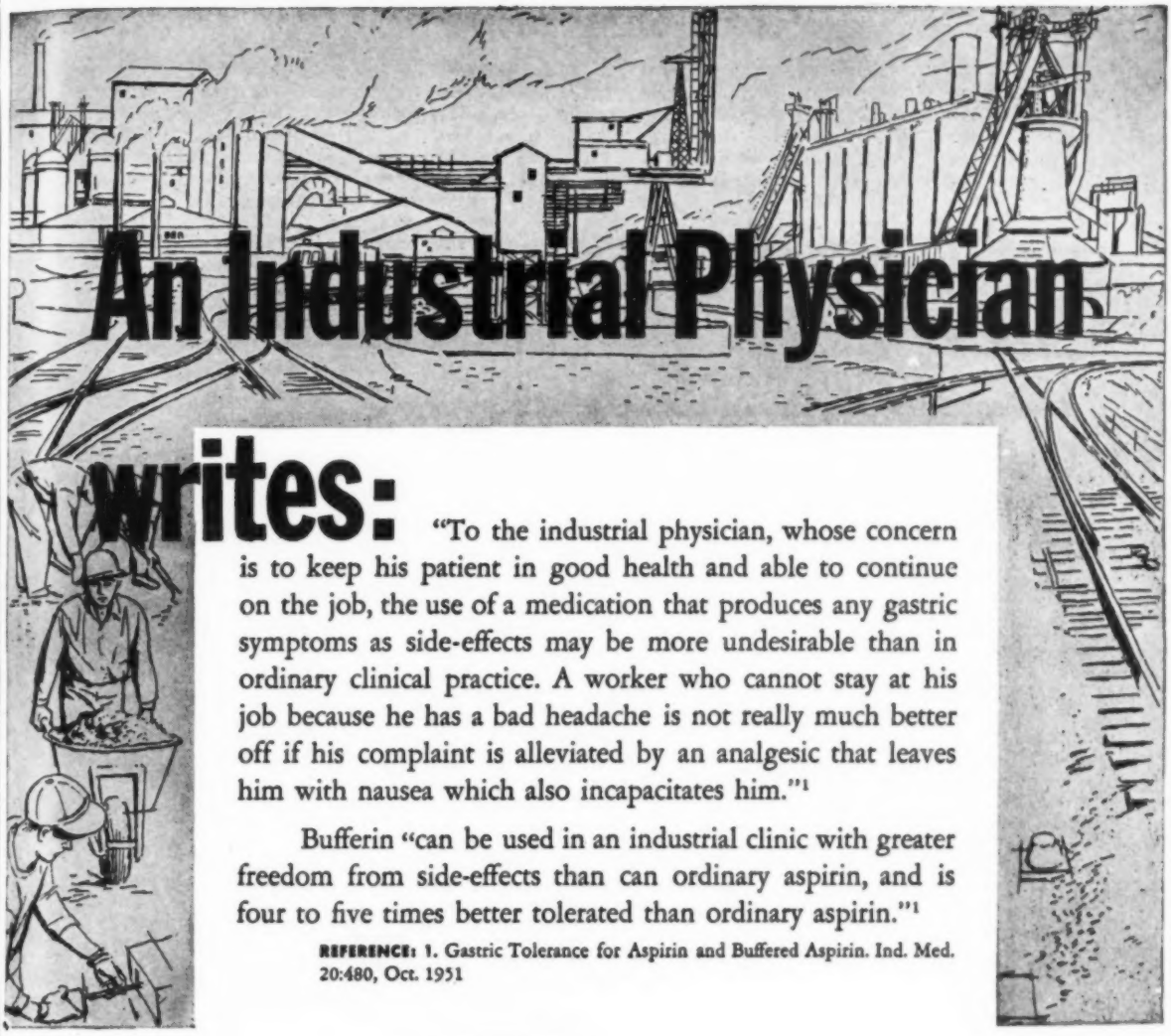
DONALD W. HENRY, D.D.S., 1955
Dental Director, Molson's Brewery
Montreal 25, Canada

American Academy of Occupational Medicine: Secretary, LEONARD J. GOLDWATER, M.D., 600 West 168th St., New York **32.**
American Industrial Hygiene Association 4400 Fifth Ave., Pittsburgh 13, Pa. HENRY F. SMYTH, JR. Executive Secy.
Council on Industrial Health, American Medical Association; Secretary: CARL M. PETERSON, M.D., 535 N. Dearborn St., Chicago 10.
Industrial Hygiene Foundation of America, 4400 Fifth Ave., Pittsburgh 13, Pa. C. RICHARD WALMER, Managing Director.



An Industrial Physician writes:

"To the industrial physician, whose concern is to keep his patient in good health and able to continue on the job, the use of a medication that produces any gastric symptoms as side-effects may be more undesirable than in ordinary clinical practice. A worker who cannot stay at his job because he has a bad headache is not really much better off if his complaint is alleviated by an analgesic that leaves him with nausea which also incapacitates him."[1]

Bufferin "can be used in an industrial clinic with greater freedom from side-effects than can ordinary aspirin, and is four to five times better tolerated than ordinary aspirin."[1]

REFERENCE: 1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951

Accepted Council on Dental Therapeutics American Dental Association

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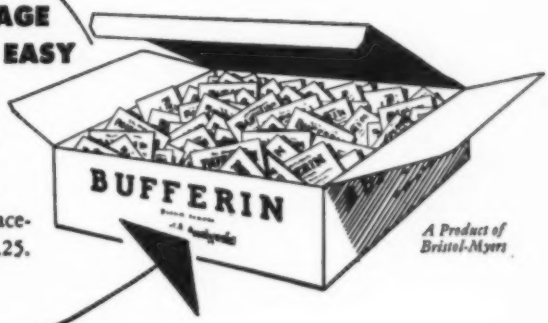

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surgeon in 1918. He was identified with the Chicago & North Western Railway, as surgeon, 1917-22; and subsequently with the Milwaukee railroad as consulting surgeon, 1938-41. When the A.M.A. Council on Industrial Health was established in 1947, he became its first Chairman, resigning in 1947 to take charge of extensive business interests in Texas. His home was in Dallas.

OLIN WEST, M.D., 77, at Nashville, Tennessee, June 19. For 23 years Manager and Secretary of the American Medical Association, DR. WEST retired from his official duties April 1, 1946. In July of that year he was unanimously chosen President-Elect of the AMA at its 95th national convention in San Francisco. Because of ill-health, he returned to Nashville.

THIS MONTH

HERE are some notes on Industrial Medicine at the 1952 Sessions of the American Medical Association, June 9-13, Chicago: "When 15,000 of the nation's physicians convene for over-all appraisal of the world of medicine, it becomes obvious that no one participant may view or hear all. The American Medical Association Annual Sessions, in their total embracement, are to be accorded first rank as a spectacle. This year the focal point of the spectacle was the scientific and technical exhibits, to be counted by the hundreds. The American Medical Association faces a dilemma. Before the days of the rise of specialty societies, the AMA Sections stood out boldly as centers for the presentation and rating of major scientific attainment. In recent years, Section meetings, even when provided superb programs and notable speakers, have been little attended. Year by year, attendance wanes for the majority of the Sections. Where 600 participants readily might be expected, perhaps no more than 60 actually share in the activities. That whole story perhaps might be entitled 'The Waning Interest in Section Enterprises.' This situation is not entirely lamentable, but it accentuates the rising significance of medical specialty associations. The heart of AMA sessions is the exhibit. There the crowds are. There is the real area for scientific presentation. Gratifying to industrial medicine was the observation that in the program of practically all the Sections were one or more presentations related to the health of the industrial worker—not always were these so labeled but implications were clear. Since a major task of occupational medicine is to infiltrate into all specialties, the appearance of these items in divers Sections represents advancement. In no degree is it contended that such papers should have appeared in the Section dedicated to industrial medicine. Just the opposite attitude is the one to be lauded. The same situation was encountered in Section scientific exhibits. Over and over there were observed admirable visual displays related to the health of industrial workers. For example, in the exhibits of the Section on Dermatology and Syphilology were materials revealing occupational dermatosis in general, and a particular one disclosing in full detail the action of chromates on the workers' skin. The Section styled Preventive and Industrial Medicine and Public Health had as its officers the following: Chairman, CAREY P. MCCORD; Vice-Chairman, VLADO A. GETTING; Secretary, JEAN S. FELTON; Delegate to the House of Delegates, STANLEY H. OSBORN; Representative to the Scientific Exhibit, PAUL A. DAVIS. These officers were succeeded after formal election by the following: Chairman: VLADO A. GETTING; Vice-Chairman, JEAN S. FELTON; Secretary, FRANK PRINCI; Delegate to the House of Delegates, R. T. JOHNSTONE; Alternate Delegate to the House of Delegates, ROY L. CLEERE; Representative to the Scientific Exhibit, PAUL A. DAVIS. By custom, this Section engages in three sessions, with one representing a joint meeting with one or more other sessions, and two being sessions devoted, respectively, to Industrial and Public Health. A feature of the Section program was a Symposium entitled 'Industrial Medicine on the International Scene.' The speakers from other countries engaging in this were: KATHARINE WILLIAMS, Harwell, England; H. D. STORMS, Santurce, Puerto Rico; SVEN FORSSMAN, Stockholm, Sweden; H. GRAHAM ROSS, Montreal, Canada; MILTON I. ROEMER, Geneva, Switzerland; R. E. W. FISHER, London, England. The significance of occupational health on a world basis was further accentuated in an international dinner, staged in the International Club at the Drake Hotel, sponsored by the AMA, and attended by all of the Section's overseas speakers, the Section officers, and members of the AMA's Council on Industrial Health. The programs of the AMA sessions well disclosed awareness that this nation is in the midst of an undeniable industrial culture maintained by some 64,000,000 of the adult population. The conservation of the health of the nation's producers is the manifest duty and opportunity of those physicians engaged in industrial medicine and all physicans.... AND HERE is a little excerpt from the Chairman's Address: "The point of divergence between the practitioners of curative medicine and appliers of preventive medicine lends itself to oversimplification. The obvious becomes complex. The 'curative' practitioner is bondholden to 'disease.' The applier of prevention is dedicated to 'health.' The former by training, experience, desire, and tradition lives in a world populated by disease. Without disease there can be no cures nor need for cures. Without cures, the curative medical man is professionally emasculated. Health is nothing to be possessed, but by him to be restored.... The preventive medical world sees disease only as defeat. All might be avoided or, at least, main effort directed toward avoidance. The shrine is not 'cure' but 'positive health' adorned by controlled birth rates, low death rates, long life spans, long periods of productive work. In an Utopian world, the arrival of which is unanticipated, the only medical men needed would be obstetricians—ideal physiology even might banish this need. In a realistic world, the prevention practitioner will never achieve his ends. His own dependence upon 'cure' is ever recognized; his admiration for the man of cure is teeming. Here, in exaggerative language, the point of divergence is tagged, but there is no divergence, only areas of dissimilar emphasis. This emphasis calls for better blending—ever in the open melting pot—never in the pressure cooker"....

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REFERENCES: Spielman, A. D. (1950), New York State J. Med., 50:2297, October 1. Brown, E. A., et al. (1950), Ann. Allergy, 8:32, January-February. Jenkins, C. M. (1950), J. Nat. Med. Assn., 42:293, September. Cullick, Louis, and Ogden, H. D. (1950), South. Med. J., 43:632, July. Ehrlich, N. J., and Kaplan, M. A. (1950), Ann. Allergy, 8:682, September-October.

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Industrial Medical and Related Chronology selected and arranged by ROBERT T. LEGGE, M.D., F.A.C.S., Berkeley, California

"That you are here—that life exists, and identity;
That the powerful play goes on,
And you will contribute a verse"
—Walt Whitman

♋ = Cancer — June 22-July 22 ‖ ♌ = Leo — July 23-August 21

1952 JULY

JULY—the birth month of Caius Julius Caesar, for whom it was named, and of the independence of the United States, which its holiday commemorates. There is significance in this apposition. Caesar was stabbed to death in his 56th year; the independence of the United States is being strangled to death in its 176th. At this time of great decisions, against covetousness and rapacity from without, and tricks and treachery from within, "let none but Americans stand guard tonight."

☽ 1st Quar. ○ Full Moon ☾ 4th Quar. ● New Moon

1 ♋ Tu
1818—Ignaz Semmelweis born in Buda. He graduated at University of Vienna in 1844. He is the true pioneer of antisepsis in obstetrics. In 1861 he published his immortal treatise on "The Cause, Concept, and Prophylaxis of Puerperal Fever."

2 ♋ W
1948—Dr. W. Irving Clark, Medical Director Norton Company, Worcester, Massachusetts, retired after 37 years with the company. He was Professor in Industrial Medicine at Harvard's School of Public Health.
"Write what thou hast seen"—St. John

3 ♋ Th
1843—Samuel C. Hahnemann, Father of homeopathy—the doctrine *similia similibus curanter*—died at Paris.
1798—Sir Humphrey Davy demonstrated his discovery of nitrous oxide as an anesthetic.
"To cure sometimes; to relieve often; to comfort always."

4 ♋ Fr
1934—Marie Curie, Nobel Prize Laureate, discoverer of radium, died at Sancellemoz, France, of a severe anemia said to have arisen from prolonged exposure to radium.
"Lord God of Hosts, be with us yet, lest we forget—lest we forget"—Kipling

5 ♋ Sa
1890—Sir Edwin Chadwick, K.C.B., died in London. Pioneer in public health and in social reforms. His general report on the sanitary conditions of the laboring population of Great Britain, 1842, is a classic.
"Beaten paths are for beaten men"—Eric Johnston

6 ♋ S
1885—Louis Pasteur successfully proved, on the boy Joseph Meister, his antirabic vaccination.
"Acquire the art of detachment, the virtue of method and the quality of thoroughness; but above all the grace of humility"—Osler

7 ○ M
1833—James Clarke White, of Boston, became the first Professor of Dermatology in the U. S. First President, American Dermatological Association, 1877.
1877—Otto Von Bollinger, 1843-1909, a Munich physician, discovered ray fungus.

8 ♋ Tu
1805—Samuel D. Gross born near Easton, Pennsylvania; became Professor of Surgery at Jefferson Medical College. A master surgeon, founder of the Pathological Society and the Philadelphia Academy of Surgery, he was first President and founder of American Surgical Association.

9 ♋ W
1892—Waldemar M. W. Haffkine, 1860-1930, a Russian-English bacteriologist, discovered an anticholera serum.
1898—Sir Ronald Ross published a letter that he discovered that parasites of malaria are communicated by the bite of a mosquito through their salivary glands.

10 ♋ Th
1910—Bernard Fantus, 1870-1940, Chicago physician, described the establishment of the first blood bank and blood preservation.
"More than one cigar at a time is excessive smoking"—Mark Twain

11 ♋ Fr
1665—Defoe's famous Journal of the Plague Year states that in London, in two parishes, there were 400 deaths.
"No public man can be a little crooked. There is no such thing as a no-man's land between honesty and dishonesty"—Herbert Hoover

12 ♋ Sa
1813—Claude Bernard, distinguished French physiologist, born at St. Julien, Rhine, France. He discovered the part the liver plays in regulating sugar metabolism through its function of storing glycogen. His work on the vasomotor mechanism is outstanding.

13 ☾ S
1794—James Lind, Chief Medical Officer at Haslar Hospital, author of a Treatise on the Scurvy, died at Gosport.
"Two and two continue to make four, in spite of the whine of the amateur for three, or the cry of the critic for five"—James McNeill Whistler

14 ♋ M
1801—Johannes Müller born at Coblenz. Founder of scientific methods in German medicine, he wrote his Handbook of Human Physiology which attracted world recognition as a classic. The ducts of Müller were named for him.

15 ♋ Tu
1662—The Royal Society founded by Charles II.
"Where there are great social needs, these can only be supplied by sound and efficient management in industry—not by the social worker, nor by the altruist, nor by the benefactor, nor by the government"—Sappington

16 ♋ W
1916—Colonel Sir Victor Horsley, pre-eminently Britain's greatest brain surgeon, died in the service of his country at Amara, and lies at rest in a military cemetery.
"How many people would be mute if they were forbidden to speak well of themselves and ill of others"

17 ♋ Th
1848—Samuel L. Dana, M.D., of Lowell, Massachusetts, translated L. Tanquerel Des Planches' classic work, a treatise on lead poisoning.
"Our main business is not to see what lies dimly at a distance, but to do what lies clearly at hand"—Thomas Carlyle

18 ♋ Fr
1925—Thomas Adis, of Stanford University Medical School, world-renown investigator of nephritis, published a clinical classification of Bright's disease.
"All that is necessary for evil to triumph in the world is for enough good men to do nothing"—Edmund Burke

19 ♋ Sa
1832—British Medical Association organized.
1573—Dr. John Caius, writer of "The Merry Wives of Windsor," historian of the sweating sickness, died.
"The value of experience is not in seeing much, but in seeing wisely"—Osler

20 ♋ S
1911—Isidor H. Coriat, Boston neurologist, devised a method of testing for apraxia in brain disease.
"It is with disease of the mind, as with those of the body: we are half dead before we understand our disorder, and half cured when we do"—Colton

21 ● M
1768—William Heberden, 1710-1801, an English physician, read at the College of London his paper "Some Account of a Disorder of the Breast."
"True, I talk of dreams, which are the children of an idle brain, begot of nothing but vain fantasy"—Shakespeare

22 ♋ Tu
1737—Carolus Lennaeus, Swedish physician and botanist, Professor of Botany, University of Upsala, published his Critica Botanica in which the names of plants, generic, specific, and varietal are examined.
"One may be humble out of pride"—Montaigne

23 ♌ W
1847—Herman Von Helmholtz, a native of Potsdam, read a paper on the Conservation of Energy before the Physical Society of Berlin stating that his doctrine was applicable in living things as well as inanimate objects—the beginning of experimental psychology.

24 ♌ Th
1622—Gaspare Aselli of Cremona discovered the lymphatic vessels while doing an autopsy on a dog.
1915—Georges Faroy, a French physician, developed an egg albumen serum for the cultivation of meningococci.
"Beware of a man of one book."

25 ♌ Fr
1888—First International Congress for tuberculosis was held in Paris.
1842—Dominique Jean Larry, chief of the medical and surgical department of Napoleon's army, died at Lyons. He introduced ambulances for sick and wounded.

26 ♌ Sa
1797—American medical journalism was born; the Medical Repository came from the press of Faud J. Swordt, at New York.
"Men of age object too much, consult too long, adventure too little, repent too soon"—Bacon

27 ♌ S
1844—John Dalton, English chemist and naturalist, died. He perfected the atomic theory which he propounded, and gave the earliest account of color blindness.
"Reading never made a physician. Medicine is an art and requires practical experience"—Paracelsus

28 ♌ M
1676—Francisco Glisson, anatomist and physiologist, Professor of Physics at Cambridge University, famous for his classic account of infantile rickets and Glisson's capsule of the liver, wrote his last book, "Ventriculo et Intestinis."

29 ☽ Tu
1856—Charles Harrington, hygienist, of Boston, a student with Von Petten Kofter, born at Salem, Massachusetts.
"Seems it strange that thou shouldst live forever? Is it less strange that thou shouldst live at all?—This is a miracle; and that no more"—Young

30 ♌ W
1892—W. M. W. Kaffkine, Russian Englishman developed an anticholera serum.
"After a man is 50 you can fool him by saying he is smart, but you can't fool him by saying he is pretty."—E. W. Howe

31 ♌ Th
1786—Benjamin Franklin, of Philadelphia, America's first scientist, described lead poisoning from drinking New England rum which was distilled where leaden still heads and worms were used. The Massachusetts legislature thereupon passed an act prohibiting the use of such stills.

"I think we have more machinery of government than is necessary, too many parasites living on the labor of the industrious"—Thomas Jefferson

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INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"

Volume 21 JULY 1952 *Number 7*

Invite the Professor to Dinner

— The Social Sciences Have a Meaning for Management —

CHRISTOPHER LEGGO, M.D.

Medical Director, California and Hawaiian Sugar Refining Corporation

Crockett, California

THE LITERATURE of industrial medicine is replete with information on health problems of individuals and of groups. The industrial physician, secure in his knowledge of his own profession, has been articulate in discussing the problems of his field.

Years of association with both management groups and employee groups have caused the author to become deeply interested in attempting to identify some of the patterns of human behavior which have constituted obstacles to industrial managements in their attempts to implement the programs described by such terms as "Industrial Relations," "Employee Relations," "Labor-Management Relations," or the current phrase, threatening to become hackneyed, "Human Relations in Industry." The industrial physician's loyalty is never completely attached to one group or the other, because his primary status as a physician demands that he maintain some degree of objectivity. Should he have become emotionally involved with one group or another in times of conflict, he must re-establish his proper bipartisan relationship.

In addressing ourselves to those who are concerned with the problems of human behavior in industry, we wish the reader to accept the following stipulations: we are making a conscious effort to adopt a detached view; our observations are tentative; they are offered to provoke further exploration; they are to be considered as potentially valid rather than proved so; and they are to be accepted as modest approaches to indicate the directions in which there seems to be the most need for further explorations in this vast and complicated field. We also are conscious of our temerity in articulating on subjects in which our security is only partial. These blanket qualifications are to be applied to whatever portions of the manuscript the reader sees fit. We will not punctuate the article by the use of specific apologies, nor burden too many of its generalizations with qualifying clauses.

We feel that no observer of the current American scene can fail to be impressed with the skill and success with which American industry has adequately met or solved problems in technology and production, nor does there seem to be any reason why confidence for the future in these fields should be limited.

It is in the relationships between the two components of industry, management and labor, that the observer finds his optimism and confidence lessened.

From the point of view of management, neither efforts nor finances have been spared in the attempts to minimize "human relations" problems. The large increase in the number of individuals employed by industries in their Industrial Relations or Personnel Department staffs, and the earnestness with which they have applied themselves to the problems, and their many contributions to the literature, speak for the efforts made.

The financial expenditures voluntarily contributed for employee welfare by American management, superimposed on contributions required by law, such as workmen's compensation insurance and unemployment insurance, cannot be calculated with accuracy. The June, 1951, governmental estimate of the annual total of wages and salaries in the United States was 166.1 billion dollars. Estimates as to the amount spent on welfare benefits vary according to the experience of the estimator, but figures have been quoted to approximate 10% of wages and salaries. In view of the fact that many examples may be found where contributions will run to 20% or more of wages, the 10% estimate may not be unreasonable. Since contributions obligatory by law will not account for more than 2% or 3% of the total, it would appear that 10 billion dollars, plus or minus, annually, is being spent voluntarily to promote employee welfare, and through this means to establish improved employer-employee relations.

If the assumption were correct that harmony between labor and management will exist in direct ratio to the amount expended on employee benefit

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plans, it might be expected that 1952 should be relatively free from labor disputes. Even a glance at the current scene displays the striking lack of such a correlation. That the methods used to date by industry to promote harmonious relations with employee groups have proved by themselves inadequate, is evidenced by the many current manifestations of disturbed labor relations. We are convinced that more effective methods ultimately may be made available by exploring fields of human behavior too long neglected by industrial managements.

These fields are loosely known as "The Social Sciences." Unfortunately, the vocabulary used by the social scientists themselves, and, indeed, the very titles of these sciences, are so formidable to the average business administrator that he has rejected them in their entirety without suspecting that in the study of social psychology, cultural anthropology, and sociology may lie real and practical help for the human relation problems which disturb and frustrate him. It is true that the word "psychology" has become accepted, and the word "psychologist" does not carry the forbidding overtones conveyed by the word "sociologist," which is assumed to mean a cross between a socialist and an old time I.W.W. soap box orator, or the word "anthropologist," which envisions a long-haired, short-sighted professor digging for mummies in Egypt, or for old skulls in the Sahara Desert.

For practical purposes, the "sociologist" may be defined as a student of our own contemporary civilization with whose problems the industrialist is involved, and of which he is an integral and important part, and which his industry is influencing tremendously, if not always as favorably as he hopes.

The "cultural anthropologist" similarly studies the cultures in other countries, and the patterns of behavior of groups other than his own. In very general terms, the sociologist is an anthropologist who stays at home, and the cultural anthropologist is a sociologist who leaves home. In their separate and joint studies they have discovered and described principles of behavior of humans, which, when applied, go far in explaining the behavior of any group of people, large or small, employed or unemployed, American or foreign in background, and account for many of the attitudes of employees which, because they have remained inexplicable to him, have caused the modern executive to become bewildered, harassed, frustrated and cynical.

Industrialists and personnel staffs of industry have been confronted with much valuable and authoritative material in "psychology," but unfortunately, most of it has been limited to the subject of individual behavior; and the chronic discontents, acute crises, "beefs," strikes, and commotions cannot be adequately explained, let alone solved, by an understanding of individual behavior only. Past behavior of a group cannot be accounted for, nor future behavior predicted, by even an intimate knowledge of the reactions of each of the individuals making up the group. Collective behavior, in calm times or in periods of stress, is subject to specific laws which require special study, since they will seldom be identified through knowledge of individual behavior, nor respond to those treasured tools of management, intuition and common sense.

It is, therefore, to those who have scientifically identified and defined group behavior that we must look for ultimate assistance in understanding and in minimizing or controlling, to some extent at least, the obstacles which have plagued the relations between two great American human groups, management and labor. We stress the word "ultimate" because we believe that several steps are necessary before the scientific knowledge accumulated and stored in scientific circles can be harnessed usefully and applied constructively in labor-management relations. The first step must be recognition that such authoritative reservoirs of knowledge regarding human behavior exist.

IT IS striking how frequently, at the policy-making level of industry, problems of human relations are considered to be "only matters of opinion," and the validity of an opinion is assumed to be in direct ratio to the rank of the person expressing it.

Because promotion to high ranks in industry is usually made in recognition of success in technological and/or production fields, it does not necessarily follow that experience in these practical fields would automatically and mystically confer authoritative knowledge of human behavior. Yet, belief in that assumption is a common pattern of modern management. This is the bottleneck which must be broken before human relations in industry wind upward to higher levels of at least partial harmony instead of spiraling downward toward increased hostility, and more prolonged and more destructive disputes between the two groups, labor and management, who are, as Baake[1] so clearly states, dependent on each other for survival.

Parenthetically, it is refreshing to note that *Chemical and Engineering News*, in November, 1950, reported a Symposium of Chemical Engineers with the headline—"Engineers in Management Posts Warned to Stop Dealing in Facts." Quotations from the first paragraph read: "Engineers and scientists moving into management posts have a greater problem in adaptation than men coming from any other field. They must learn to stop dealing in 'facts' and to start dealing in 'people' . . . . once the first step is taken and the technically trained executive realizes he is dealing with an infinity of unknown variables and cannot expect standard much less reproducible results, then he must take the second step and learn that his reactions to situations are not universal. The very

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nature of his training has made him atypical in a social situation because he is more literal-minded and tends to be more rationally motivated."

Once it is accepted that explorations in the fields of the social sciences may be a self-liquidating investment in intellectual energy, the second step of how most profitably to approach the project must be considered. At this point let us stipulate that it is not suggested that the present-day executive or administrator may ever become an authority in any social science. Our hope is that he may attain sufficient orientation that he can follow and understand some of the more practical ideas expressed by those who have adopted these sciences as a profession.

By way of explanation, let us visualize a modern industrial executive who has on his staff a Chief Engineer, a Chief Chemist, a Chief Counsel, and a Medical Director. He, himself, is neither an engineer, chemist, lawyer or doctor, nor does he feel under any compulsion to undertake to qualify himself for a professional license in any of these professions. We may be certain, however, that his long association with each professional member of his staff, supplemented by his reading of both inter-office documents and educational material in his library at home, has oriented him so thoroughly in each of these professional fields that he can grasp the professional problems involved in each department's projects, and intelligently supply the over-all supervision necessary in each program. Much of this orientation has been possible because he has incorporated in his vocabulary a sufficient number of engineering terms, or medical terms, as the case may be, to understand their use, and in turn the engineer and the doctor have learned to translate into lay terms some of their own technical verbiage.

If an executive did not understand any engineering phrases, and the engineer spoke only in technical terms, the result would be a two-man Tower of Babel. A somewhat comparable situation might well develop if any industry were precipitously to decide to employ a social scientist and assign him complete authority for the administration of its industrial relations program. We emphasize this in case the reader anticipates that we are at the point of advocating employment of social scientists in industry at the present time. We have no doubt that such a pattern may eventually develop, and that social scientists will find a place in industry in either a consultant or staff capacity, but there must be an adequate period of orientation before such experiments will offer any great hope of success.

It must be remembered that the engineering profession, the legal profession, and the chemical profession have had many years of close association with industry, and the mutual orientation between these professions and industry is well developed. Orientation between the medical profession and industry has been developing for 50 years—at an accelerated pace since the introduction of workmen's compensation insurance laws. Atomic fission has recently caused a very rapid intimate association between industry and the physicists.

We are, however, confident that the future of labor relations will be favorably influenced in direct ratio to the number of executives who take the initiative in establishing intelligible communications with the social scientists, and on the number who orient themselves in the fundamentals of social psychology, sociology, and cultural anthropology.

Self-education in these fields may be initiated by either of two methods, and adequate progress will be insured if both methods are combined, namely, by study through reading basic material and by personal contact with contemporary authorities in the social sciences, either on a person to person, or on a group basis. Briefly stated, the novice is advised to "Read the books, and ask the professor to dinner." We are not in a position to specify which professor might best be the recipient of the hospitality of any particular group of industrialists, but we will presume to recommend specific reading material which we believe will offer a maximum of return for the time and effort spent.

SOME guidance is necessary in the choice of reading matter, since the bulk of the material available is couched in such technical language, popularly described as "gobbledegook," that the reader may form the conviction that the words were deliberately chosen to conceal meaning, rather than to reveal it.

There are, fortunately, a number of pioneers who have written articulately. For a readable introduction to cultural anthropology, "Patterns of Culture" by Ruth Benedict[2] (Houghton-Mifflin Company) is recommended. (This is also published in a paper covered edition and has proved the best seller of the Mentor Book series.) Benedict describes the social behavior of three primitive groups, each with entirely different behavior patterns from the others, and entirely different social values and standards of prestige. This book will illustrate several basic fundamentals, the lack of recognition of which has stood, and continues to stand, in the way of much progress in human relations. One of the most important of these seems to this author to be:

Very few modes of behavior are instinctive or "normal."

This is important to the modern executive who, because of his age, was well schooled in the belief that an individual's behavior was the product of his heredity, environment and training, and that heredity played a powerful and frequently overwhelming part in his behavior. In the last 30 years it has become well documented that the influence of heredity in racial or group behavior may be discounted greatly, if not almost entirely.

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Behavior, whether in the area of morals, economics, or social customs, is a matter of style. The "keeping up with the Jones" is not confined to our Western civilization. The primitive Jones' may be members of an island clan, who have been granted a high social status in their group, and have been accorded great prestige as leaders in it because of their success in the practices of treachery and deceit, which qualities are much admired by their fellows. The social climbers, in this culture, by competing in these practices, will attempt to raise their own status and prestige and so—"keep up with the Jones'."

To view as normal this system of rewards for what we, in our Western Hemisphere culture, consider misbehavior is likely to disconcert those of us who are confronted with it for the first time, and to cause us some sense of insecurity. It is contrary to most of our past beliefs to accept the statement that neither honesty, nor straightforward dealing, nor indeed, almost any other "right" action is an inborn characteristic of people, but is purely the result of standards (norms) developed as a style under our own particular contemporary Western culture.

Apropos of this conclusion, if the reader is concerned with the national lowering of our standards in honesty in so many areas and to which so much current attention is being drawn, and if he is concerned with the threat to Western civilization by a power whose preachings not only seem to condone but to place a premium on furthering its ends by what we consider treachery and deceit, he should find this book of interest. He may also catch a hint that practices brought about by culture must be modified —if they are to be modified deliberately—by the use of methods which themselves are cultural, and that when culture threatens culture, cultural means of defense must be discovered and utilized for defense. Individual or collective indignation and screaming to the high heavens that what "we" do is right and therefore what "they" do is wrong is a self-satisfying outlet for a quite understandable emotional distress, but it will not alter the behavior of people whose behavior is, to them, perfectly rational and in keeping with, and dictated by, their norms.

We interpret a second conclusion as being:

The behavior of any group of people makes sense to that group, no matter how irrational it may appear to any or all other groups.

Any form of behavior will continue, no matter what its pattern, as long as it is rewarded, and whether the group be six people at a station in a factory or six million people in one country, the system of rewards and punishments in force either from within or from without the group, will dictate its perpetuation, or its modification, regardless of how loud the emotional outcries praising or condemning it.

THAT the principles of anthropology may be of use to the business administrator, is indicated by their demonstrated practical assistance in the administration of group affairs by governmental administrators when they have been put to the test. This statement is well documented in the next two books to be recommended.

For an articulate exposition of principles of group behavior and their operation in a concrete situation, attention is enthusiastically drawn to the "Governing of Men," by Leighton.[3] Psychiatrist, sociologist and anthropologist, Leighton gives a chronological account of the events, the hardships and the tensions as they developed in a concentration camp of Japanese at Poston, in the desert; of the resultant strike, and how through the application of cultural methods, rather than by retaliations dictated by emotion, the situation was brought to a satisfactory state of stability. The last chapters of the book are conclusions and recommendations in regard to administrative problems and group behavior. The book is so clearly written that it makes it possible for the reader to identify many situations of stress in his own environment to which he may apply these principles. Stripped of their editorial comment these principles and recommendations extract to 17 mimeographed pages. Several are quoted as examples;

"Never dismiss complaints as trivial; they may be only gripes, but they may also be clear warnings of imminent trouble and one cannot tell which without investigation."

"Beware of letting personal likes and dislikes muddy the issues when dealing in disturbed human reactions; it should make no difference how a man trims a ship for a storm whether or not he thinks the storm justified."

"Remember that it is a common failure of administrators to refuse mild requests that they can and should grant, while later yielding to aggressive demand that forces itself on their attention; such behavior encourages the destructive aspects of aggression."

"Never make threats or pass laws that cannot be enforced; there is no quicker way to undermine the power of an administration."

Leighton[4] has published a second book, "Human Relations in a Changing World," written after his experiences in an entirely different background, Japan after the atomic bomb bursts. The "Governing of Men" should be read from cover to cover to extract its full value. "Human Relations in a Changing World" may be subjected to "skip reading." The chapter entitled "The Policy Maker," however, is "must" reading for the administrator who combines insight with a sense of humor. He might better avoid the book if he fails to find any cause for delight in the following sample quotation:

"Policy making is a prerogative that is jealously guarded, and to share it with others is to lose some of one's stock of prestige. It is in the monolith tradition, and the conference table is often a kind of battlefield where one wins his reputation or loses it. Discussions about 'what

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policy' sometimes only make sense if one realizes that the real issue is 'whose policy.' The promotion of collaborative thinking, the development of group participation on the part of all staff members, the building, in short, of an effective team so that the vast work can be accomplished that is necessary in creating an efficient and well-adjusted policy, these are secondary matters."

Neither will the book interest him if he fails to see any possible application to business administration in the following quotation:

"There is a story of two medieval scholars who argued for 30 years about the number of teeth in a horse's mouth without ever looking at a horse. Modern policy makers are not exactly like the medieval scholars who totally avoided looking in the horse's mouth. They give consideration to the idea of looking at the horse, but hang back afraid that the result might not come out in their favor and people would 'jump too quickly to unsound conclusions.' If someone else looks at the horse and finds that a policy maker's view is correct, approval results. If, on the other hand, it is reported that the policy maker was wrong, he will bring his rational battery into play and say that this means nothing because only one horse was examined, and he might have been exceptional, and that it would be necessary to look in the mouths of 10,000 horses in order to show proof and have the 'hard facts.' Meanwhile, since policy based on the number of teeth cannot wait pending the extensive research this would require, or since there are no funds to finance it, or because Congress and the American public would not approve, the policy maker is forced to go ahead and make his decision on the basis of the original idea of five teeth or 50 teeth rather than rely on the dubious findings of the man who has looked in the mouths of one or two horses."

If these two quotations have appealed to the reader we suggest he discover that portion, too long to quote, in the same chapter, which describes the methods of study used by the naturalist and the physician, and which concludes with the following:

"We are always looking for the villain instead of human beings going through the business of living as best they can, some helpfully and some destructively in their actions toward the welfare of others. Preoccupation with the search for the villain blinds us to the constellation of events past and present that gave rise to him. From the functional point of view 'what gives rise' is the question. Can we, through understanding the forces that produce villains, alter situations so that there will be less ground on which they can flourish? Must we be forever content with trapping rats? Cannot we also stop up their holes and rid ourselves of the places that breed them? The world is getting too small for the luxury of villains, and there is a widespread need for the physician's obsession with getting at causes and not tinkering with symptoms only. These, then, are the implications of the functional view. By and large, they enter only a little into most of the thinking that gives rise to policy."

As corollary, although not necessarily required reading, we mention "The Cultural Background of Personality," by Linton,[5] which is a moderately technical description of the effect of environment on personalities of individuals and the resultant effect on the groups which they form. We consider Linton's description and discussion of the words "status" and "role," both key words in the semantics of human relations and human needs, so informative that we regret that it is too long to quote in full. but we are extracting the following portions:

". . . . Let us suppose that a man spends the day working as clerk in a store. While he is behind the counter, his active status is that of a clerk, established by his position in our society's system of specialized occupations. The role associated with this status provides him with patterns for his relations with customers. These patterns will be well known both to him and to the customers, and will enable them to transact business with a minimum of delay or misunderstanding. When he retires to the rest room for a smoke and meets other employees there, his clerk status becomes latent and he assumes another active status based upon his position in the association group composed of the store's employees as a whole. In this status his relations with other employees will be governed by a different set of culture patterns from those employed in his relations with customers. Moreover, since he probably knows most of the other employees, his exercise of these culture patterns will be modified by his personal likes and dislikes of certain individuals and by considerations of their and his own relative positions in the prestige series of the store association's members. When closing time comes, he lays aside both his clerk and store association statuses and, while on the way home, operates simply in terms of his status with respect to the society's age-sex system. Thus, if he is a young man he will at least feel that he ought to get up and give his seat to a lady, while if he is an old one he will be quite comfortable about keeping it. As soon as he arrives at his house, a new set of statuses will be activated. These statuses derive from the kinship ties which relate him to various members of the family group . . . . If it happens to be lodge night, all his familial statuses will become latent at about 8:00 o'clock. As soon as he enters the lodge room and puts on his uniform as Grand Imperial Lizzard, in the Ancient Order of Dinosaurs, he assumes a new status, one which has been latent since the last lodge meeting, and performs in terms of its role until it is time for him to take off his uniform and go home."

We believe that many conflicts in industry

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may be explained by viewing them in terms of "status" and "role." As Linton states, most of an individual's various statuses are activated at different times and so a head-on collision between the roles associated with them is prevented. It is when statuses meet whose roles are fundamentally incompatible that we have the material of high tragedy.

We believe the problem involved in unionization of supervisors, for example, will be usefully illuminated if it is viewed objectively in terms of conflicts of status and role rather than viewed emotionally and those involved made subject to edicts as to where their undivided loyalty will be assigned, "or else."

It would be interesting to explore the various statuses and roles necessarily assumed by the industrial physician. Among them are his status as a friend of the employee, his status in a physician-patient relationship to the employee, his own status as an employee, as a member of management, as an authoritative medical adviser and, at times, as an authoritarian arbiter.

According to Linton, many of the uncertainties and frustrations suffered by individuals in both labor and management circles are due to the many recent changes in social structure resulting from our industrial development; these have caused certain of our inherited systems of statuses and roles to break down while new statuses and roles, compatible with the actual conditions of modern industrial life, have not yet emerged.

THE last book to be recommended for cover-to-cover reading is "The Human Group," by Homans.[6] This volume presents much material that is very new, and will be slow reading regardless of the preparatory background of the reader. Many may prefer to wait five or 10 years until this material has gone through various translations and simplifications so that its valuable contribution to group behavior is made assimilable for popular consumption. For those, however, who are willing to dig through more than 400 pages of intellectual granite to extract from a rich vein the pure gold of human relations, the effort should be worth-while.

Homans describes five groups,—12 employees in the Wiring Bank at the Westinghouse Electric Company (a further extension of the Hawthorne experiment material), a street corner gang, a South Sea Island population, a disintegrating town in New England, and an electrical equipment company which encountered necessary reorganization difficulties during the depression. He has defined rules of behavior which apply with equal consistency and uniformity to each of these almost incongruously separated groups of people, so different in size, location, racial and cultural background. Much useful material is developed on the subject of leadership, and the light thrown on this subject alone will richly reward the diligent reader.

Not all material on human behavior of groups is in textbooks, of course. Shorter articles are frequently found in periodicals. Of many examples, we mention "Making Human Relations Work," by Elizabeth and Francis Jennings (*Harvard Business Review*, January, 1951). While no direct reference is made to the social sciences as such, the discussion of practical problems and the beliefs and the needs of employee groups, together with the suggested methods of meeting them, are all based on the fundamental principles of the social sciences of social psychology, sociology, and cultural anthropology. The authors deserve credit for having adroitly avoided what they speak of as "the obscure language in the science of human relations"; they have made a noteworthy contribution toward helping to find a way "to bridge the gulf between the social scientists and management which this psycho-social language has created."

Also recommended is a collection of essays by sociologists, edited by William Foote Whyte,[7] entitled "Industry and Society." Since each subject is discussed by a different author, all chapters will not have a uniform appeal to various readers. Those who are interested in the problem of attendance and absenteeism will be most interested in the chapter by Allison Davis, "Motivation of the Underprivileged Worker." It is a vivid reminder of the pitfalls of considering reactions to situations as being universal. While it deals with the lowest class of workers recruited from the slums of a large city and as such may caricature rather than describe the attitudes of the employees of any given industry, we believe the principles discussed may be recognized as operating in some cases in any employed group.

We have stressed our belief that industrial leaders may learn much from the authorities in the social sciences. The advantages of mutual orientation will be reciprocal, since increased communication with business leaders has much of practical value to offer the social scientists. Their present lack of complete orientation in industry almost inevitably leads them to statements which obviously do not fit the realities of the world of business, and single statements which can be discredited are likely to discredit many of their sound statements.

THE administration of human affairs requires the use of both art and science. By and large, the business administrator has been practicing the art of dealing with people, while the social scientist has been preaching the science of human relations. Increased inter-communication should inevitably supplement the business administrator's art by the addition of science, and should add art to the methodical teachings of the social scientist.

The social scientists will readily understand that increased contacts (interaction) between individuals normally lead to still further con-

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tacts and mutually inspired activities. It is for this reason that we have suggested the dinner invitation to the professor, with the certainty that some joint programs of activity will be initiated. The segregation of business men in their social clubs and the college staffs in their faculty clubs, and the lack of a common social life diminish that type of communication which, when it exists between groups, leads to constructive cooperation.

This same isolation of professors has resulted in a lack of communications with the community at large. Recent emotional conflicts over loyalty oaths have accentuated rather than lessened prejudices involving college faculties. Without attempting to place responsibilty, one cannot help but wonder if college regents and their faculties, between them, have not failed to utilize the cultural methods available through their own staffs, which might have avoided the controversies that have tended to lower university prestige and increase public prejudice.

That a sociologist may be effective in influencing beliefs of people needs no more elaboration than the mention of Karl Marx. That much of his philosophy may have been discredited by most of the sociologists since his time will not lessen his influence unless the contributions of the latter group are publicized in understandable terms. We believe the translation and circulation of current beliefs and concepts of the social scientists into everyday English may be of great value to the American people in resisting the cultural effects of Marx and the aggression of those who have harnessed his most destructive techniques.

WHILE this paper has been addressed primarily to those in the field of business administration we feel that the context is of equal importance to labor union leaders. Labor's contribution in both effort and financial expenditure in the area of labor-management relations must also be stupendous, and if any method could be found to calculate the cost it should be added to the estimate of the 10 billion dollars we have already mentioned.

Management and labor are both components of our present society, and we do not believe it is too idealistic to hope that the relations between these two components may be improved not only to their own benefit but for the benefit of society as a whole. We do not advocate the use of the social sciences for the development of techniques for furthering selfish aims of any one class of people against the interest of another. That such may happen is possible. It has already happened in the case of Marx. We do believe with Stuart Chase[8] that "the proper study of mankind" is a deeper process than has yet been undertaken by many leaders in either American industry or labor.

Homans quotes Mary Follett as saying, "I do wish that when a principle has been worked out, say in ethics, it didn't have to be discovered all over again in psychology, in economics, in government, in business, in biology, and in sociology. It's such a waste of time."

Both management and labor have made many discoveries in regard to human behavior which will be of value to the social scientists, and it is an exchange of information which we ultimately visualize and not a one way teacher-pupil relationship.

A frequent objection offered to the establishing of a liaison with social scientists is that "they do not have the answers." This is true, and for those who seek ready-made and immediately available answers to the problems of human relations in any field, let alone those in industry, the author has no recommendation. The golfer who wishes to improve his game does not reject tutelage in the proper stance from the club professional because "he will not hit the ball for me."

While granting that the study of the social sciences does not promise immediately to revolutionize the present methods of dealing with group relationships, it does offer to alter the perspective of the frustrated executive who is so harassed with immediately pressing problems that he must extemporize on a day-to-day basis. He may find it possible, with the help of those who are not so emotionally involved in his short-term harassments, to plan a long-term program.

WE REALIZE that the course of reading and interviewing suggested in this paper must be stretched over many months and, if undertaken, it must be carried out in the reader's spare time, and so must be inspired through sheer love of the subject. It cannot be expected that many of the present generation of business administrators will undertake to complete such a program. All, however, may be encouraged, insofar as occasion offers itself, to endorse the movement to incorporate basic courses in the social sciences for all university students who are entering business or professional fields.

Educators will state with justification that calendars are so crowded that to make such courses mandatory would be at the expense of either classical or technical subjects. In view of the self-evident fact that our greatest difficulties, local, institutional, national and international, today are not of a type to be solved by classical education, and that technical progress has been more rapid than our advances in human relations, it would seem that some sacrifice in technical and classical education might be afforded.

Homans emphasizes the need for this type of education in his statement, "In American industry for instance, communication is excellent on questions of sales and engineering but tends to be poor on questions of internal social organization. This kind of information may be inherently hard to communicate, but it is also

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true that the American administrator is not taught to think it important."

BY WAY of recapitulation, we might point out that an industrial firm will not spend $50,000 on a building without the supervision of an architect, nor will it purchase an expensive piece of engineering equipment without engineering advice. It is standard practice to employ skilled statisticians to keep the complexities of mathematical calculations from becoming snarled. These types of expenditures so obviously require study and control by specialists in these fields that the employment of such experts is taken for granted.

The annual expenditure of sums running into billions of dollars annually on matters which constitute an integral part of and materially affect the social life of American industrial groups has seldom been recognized as requiring skilled consultation, let alone direction, by authorities on social problems. In the past, programs intended to benefit employees have been instituted on the assumption that beneficial intent insured beneficial results.

We believe that the majority of employers, if not all of them, have had occasion to observe that a privilege, once accorded, becomes an established right, and that as a right it may become a matter of contention and dispute, often involving mutual recriminations and bitterness never visualized at the time of its inception. Those responsible for the initiation of benefit programs whose sweetness has curdled must not be criticized for their lack of a greater insight into group reactions than that with which nature has endowed any ordinary mortal.

The Horatio Alger hero of modern industrial relations has been assigned a task for which even his Herculean endowments have not equipped him.

OUR previous suggestions have been directed to individual managements, or individuals in management. We believe, however, that a constructive long-term step might be taken by managements collectively in any given geographical area or region if they would pool a contribution of as little as one-half of one percent of the total of their present mandatory and voluntary contributions to "welfare" and endow foundations for the long-term study of industrial relations by staffs of capable and objective social scientists. In those localities where relations are disturbed, the causes might be explored and defined, and in those areas where the relations are relatively harmonious the isolating of the causes of the favorable working climate should be of equally positive value.

It must again be emphasized that those who would expect any immediate "answers" would be disappointed, and that those who are already in acute difficulties can look forward to no immediate help.

There is always a time lag between causes and effects, and today's difficulties are not the result of conditions which arose yesterday or the day before yesterday, nor will improvement result tomorrow from favorable changes initiated today.

Having already pleaded guilty to leaving the security of our own field, we must allow the reader to decide whether we have reached out or merely groped, have been idealistic or simply naive, have explored or merely prospected, and whether we have prophesied or just hoped. It is a spirit of hope, however, and not one of prophecy, which impels us to conclude with a single sentence by Dr. George E. Vincent, published in the *Yale Alumni Magazine*, September, 1941, just five years before the first atom bomb burst, which reads:

"The world is going to be modified only in proportion as in every nation there is an increase in the group of men and women who think, who have their emotions under control, who have suspended judgment, who have tolerance, and who are ready to play their part modestly, with no illusions as to what they are doing, with no dream of a millennium just before them, but feeling the conviction that if, day by day, they live with intelligence, with poise, with all the wisdom they can possess, and that if they use their intelligence on their fellows in order to spread the rule of sanity and of tolerance and of honesty, then slowly there will be created in every nation a changed atmosphere, a changed attitude, out of which one may hope that better, if not altogether fraternal, relations can be slowly built up."

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Pre-Employment Low-Back X-Ray Survey

— A Review of 1500 Cases —

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PRE-EMPLOYMENT x-ray examination of the low-back has now passed the stage of innovation. It has become an established procedure in some of the large industries where hazardous and heavy skilled labors are involved. Further impetus to this type of study has been provided by the fact that there is no single condition in this country that causes more lost man-hours than disability from low-back symptoms. The explanation for this lies in the fact that the lumbosacral region is more frequently the site of anomalies than any other part of the body. Pain and disability could be and often are consistent with the anomalous findings.

The purpose of this survey was the elimination of those applicants for hazardous train and engine service who have low-back instability as the result of anomalies, disease, or previous traumatic pathology. It was equally important to reject applicants if conditions found in the spine simulated lesions or fractures that could form a future basis for medicolegal action.

Awards for disability of the spine, whether due to injury or aggravation of pre-existing conditions, "come high" in the courts of law. This is well known to both laymen and their legal advisers. This medicolegal feature has many ramifications, and a detailed explanation is beyond the scope of this paper.

The analysis and tabulations herein presented are of real value for medicolegal reference. The information they afford could be of great assistance in the fair and just adjudication of medicolegal problems should a disability arise from subsequent injuries or diseases of the lower spine. A further advantage is the assignment of workers with unstable low-backs to jobs compatible with their physical ability.

Personnel

THE personnel involved were male applicants for train and engine service with an average age of 25.3 years. After they passed their physical examination the x-ray was the last step in the final approval for employment.

The geographical distribution extended from Philadelphia and New York to Chicago and St. Louis. These applicants were examined at various cities on the railroad lines by certified radiologists, and films with interpretation were mailed to the Chief Medical Examiner. All the cases rejected were reviewed. Only spot studies were made of the cases that were acceptable.

From the Medical Department of the Pennsylvania Railroad. Presented at the Sixty-Fourth Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, April 1, 1952.

Technique

THE x-ray examination consisted of two 14 x 17 films which included the AP and lateral views of the lumbar spine and sacrum; right and left oblique views were taken on two 10 x 12 films of the lumbosacral area. This type of study is considered by most authors as being adequate for this purpose.

Findings

RESULTS of the review of the 1500 cases are shown in Chart I. Only 825 or 55% showed no gross abnormalities; 675, or 45%, revealed various conditions, and of the latter 60% had single lesions, and 40% had multiple lesions.

CHART I.
PRE-EMPLOYMENT LOW-BACK X-RAY STUDIES

Total number of cases reviewed	1500	
Average age	25.3 years	
	No. of Cases	Per Cent
No lesions	825	55
With lesions	675	45
Single lesions	405	60
Multiple lesions	270	40

SPINA BIFIDA: The lesion found most frequently was spina bifida occulta (Chart II). This failure of fusion of the laminae of the first sacral segment was present in 299 cases, or 20%, of the series. As shown in the chart, 162 cases, or 54%, revealed varying degrees of spina bifida occulta, but in 137 cases, or 46%, lesions were multiple. In 51 cases Schmorl's nodes were found, and in 24 cases segment L-5 was narrowed posteriorly. The finding of this percentage of cases of this condition is comparable with Southworth and Bersack's[19] report of 16% in sacral segments in a series of 55 cases, Cushing and Maier[6] 17% in 931 spines, and Giles[10] 23.9% in 1,112 cases. Friedman[8] et al found 36% in 100 cases. The cases of minimal spina bifida occulta are accepted for employment if the condition is not accompanied by any other lesion.

CHART II.
SPINA BIFIDA
(Failure of Laminal Fusion)

	No. of Cases	Per Cent
Spina bifida of S-1	299	20
Single lesions	162	54
With other lesions	137	46
With Schmorl's nodes	51	17
With L-5 narrowed posteriorly	24	8

SCHMORL'S NODES: These lesions (Chart III) are usually multiple and mostly located in the lumbar area.[15]

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Schmorl ascribed this condition to existing cartilage islands where the nucleus pulposus is forced through. Small cavities form in the bone tissue which vary in size and are filled with nucleus tissue.

Prolapse followed by cupping of the bodies may result in ballooning of the discs, so that the bodies become concave and the disc convex.

There were 195 cases, or 13%, in the series. Lesions were single in 72 and multiple in 123 cases. Reports of this condition vary. Friedman et al[8] designated 8% as Schmorl's nodes.

CHART III.
SCHMORL'S NODES

	No. of Cases	Per Cent
Total cases	195	13
With other lesions	123	60
With spina bifida	51	
With L-5 narrowed posteriorly	28	

CURVATURE OF THE SPINE: All cases with more than minimal structural curvatures and scoliosis were rejected on the basis of low-back instability (Chart IV). We found 115 cases, or 7.7%. In 44, or 38%, the lesions were single, and in 71, or 62%, the lesions were multiple. This is a much lower incidence than that reported by Southworth and Bersack,[19] who found 66 cases, or 22%, of scoliosis in 300 cases. Allen et al,[1] in 3000 cases, had 45 cases, or 0.5%.

CHART IV.
SPINAL CURVATURES

	No. of Cases	Per Cent
Total cases with more than minimal curvatures	115	13
With other lesions	71	62
With spina bifida	26	
With Schmorl's nodes	25	
With transitional segments of L-5	8	
With spondylolisthesis	3	

TRANSITIONAL SEGMENTS: In this group (Chart V) of transitional segments of L-5 showing sacralization, a total of 71 cases, or 4.7%, was found, in 43, or 60%, of which the lesion was unilateral, and in 28, or 40%, of which both sides were affected. The incidence is lower than that reported by Southworth and Bersack,[19] who found 35 cases in 550 cases, or 6.4%. Friedman et al[8] found 11% in 100 cases. Allen and Lindem[1] reported 168 in 3,000 cases, or 5.6%. Since 36% showed arthritic or sclerotic bone changes, we believe these findings represent potential low-back instability.

CHART V.
TRANSVERSE PROCESSES

	No. of Cases	Per Cent
Transitional segments (Sacralization of L-5)	71	4.7
Unilateral	43	
Bilateral	28	
Without arthritis	45	
With arthritis or sclerosis	26	
Unfused L-1	15	
Fractures	2	

COMPRESSIONS: Compression (Chart VI) of the vertebral bodies into wedge-shaped deformities of various types was found in 67 cases, or 4.4%. Of these 47, or 70%, showed a marked narrowing of segment L-5 posteriorly, and this condition was of unknown origin. In 15 cases the compression was at the anterior portion, of various origin, and in five cases the lesions were definitely healed compression fractures. The latter 20 cases are medicolegal hazards.

CHART VI.
VERTEBRAL COMPRESSIONS

	No. of Cases	Per Cent
All Compressions	67	4.4
L-5 posteriorly	47	
Anterior compression (unknown origin)	15	
Compression fractures	5	

SPONDYLOLYSIS: (Chart VII): This failure of fusion defect of the pars interarticularis includes spondylolisthesis and pre-spondylolisthesis. In the entire group there were 44 cases, or 2.9%. This number is comparable with other reports of 6%,[8] 3%,[4] 3.5%,[9] 5.2%,[21] 5%,[18] and 2.96%.[20] At the other extreme is the finding of 1.1% in 171 cases.[16] Spondylolisthesis was represented by 23 cases, and pre-spondylolisthesis in 21 cases. All were rejected as potentially unstable low backs and medicolegal hazards.

CHART VII.
SPONDYLOLYSIS
(Defects of the Pars-Interarticulars)

	No. of Cases	Per Cent
Total number of cases	44	2.9
Spondylolisthesis	23	52
Pre-spondylolisthesis	21	48

MISCELLANEOUS: Most of this group (Chart VIII) were rejected for employment. There were 13 cases of osteochondritis, ring epiphysitis or Scheuerman's disease. This condition usually involves the lower dorsal and upper lumbar areas. In addition to fragmented calcifications of the cartilage there were compressions of the bodies[17] and secondary prolapse of the nucleus pulposus. Fracture or aggravation due to injury is the usual claim for awards.

Persistent epiphysis of the inferior articular process is not unusual, while isolated fractures are rare.[2] Farmer [7a] considers this anomaly more prevalent than generally believed, and found 40 out of 2,535 cases, or 1.5%. We found only six cases, or 0.4%, involving L 2-3 and 4. One case was bilateral. When found by a claimant it is difficult to prevent large awards. Persistent epiphysis of the lumbar bodies is usually located on the anterior superior aspect. We found four cases with this single lesion. Friedman et al[8] report this finding as high as 2%. This finding is frequently interpreted as a fracture.

Vascular grooves were found in lower dorsal and upper lumbar area in six cases. They are usually multiple. These have often been miscon-

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strued as fracture for medicolegal claim purposes.

Degenerative discs of L-5 were found in 32 cases with no apparent disc symptoms. It may be concluded that a degenerative disc does not always imply that a herniation exists.

CHART VIII.
MISCELLANEOUS

Condition	No. of Cases	Per Cent
Hypertrophic spurs	47	3.0
Asymmetry of facets (more than minimal)	36	2.4
Degenerative discs L-5	32	2.1
Osteochondritis	13	
Sacro-iliac arthritis	7	0.5
Lumbarization of S-1 (4 with scoliosis)	7	0.5
Double sacral promontory	7	
Persistent epiphysis of inferior articular process of L-2-3-4	6	0.4
Persistent epiphysis of anterior superior aspect of lumbar bodies	0	0.3
Vascular grooves (lower dorsal and upper lumbar)	6	0.4
Fusions of vertebral bodies (non-operative)	3	0.2
Pre-Paget's disease	1	
Previous myelographic study	1	
Calcification of ligaments (Marie-Strumpell type)	1	

Summary

1. THE X-RAY abnormalities of the lumbar and lumbosacral spine, of 1500 male applicants for train and engine service, have been studied and tabulated.

2. Of these 625, or 45%, presented one or more anatomic-pathologic conditions, most of which caused rejection for employment as unstable low backs.

3. Any condition simulating trauma, that could form a basis for future medicolegal claims, was rejected.

4. The x-ray films, besides the scientific medical data revealed, constitute a permanent record of the lower spine at the time of initial employment.

5. Subsequent disabilities of the back could be more properly interpreted by comparative x-ray studies.

6. The illuminating value of the information far transcends the cost.

[The authors wish to express their appreciation to Mr. Raymond C. Houchins and Dr. T. Merzane for assistance in the preparation of this work.]

(Spruce Street Medical Building)

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Discussion

ANTHONY F. DEPALMA, M.D., Professor of Orthopedics, Jefferson Medical College; Consultant Orthopedist, Pennsylvania Railroad: An analysis of Dr. Colcher and Dr. Hursh's paper, "Pre-employment Low-Back X-ray Survey," reveals that there have been considerable time, effort and study expended in assembling the material upon which he bases his findings and in the careful critical analysis he has made of the various lesions found roentgenographically.

There is no doubt that work of this type will set certain radiographic standards in pre-employment examination of men in all types of industry. Of course, it becomes apparent that it will also be a valuable reference for medicolegal testimony in the future.

It was astonishing to me that only 55% of the applicants were accepted for employment, based on this survey. It would appear that more than half of the individuals are not physically fit to work in certain types of industries, which means that some revision will have to be made whereby minimum standards will be set up in order that there will not be such an exclusive section of employees by certain industries.

The figures relative to the incidence of spina bifida, Schmorl's nodes, and curvature of the spine, of course, are in accordance with the findings of previous workers.

It is my feeling that Dr. Colcher and Dr. Hursh have made a valuable study and should carry this investigation even further, because undoubtedly much knowledge will be gained by this type of investigation.

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A Program of Tetanus Immunization for Industry

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THE industrial physician, and in fact any practicing physician, is faced from time to time with the problem of whether to administer tetanus antitoxin to a person who has sustained an injury. This decision must be influenced to a great extent by the fact that about 10% of the patients so treated will develop serum sickness with urticaria, fever, arthralgia and adenopathy to what is often a disabling degree.

It is well known that an existing sensitivity to the antiserum may be demonstrated by the intradermal test. However, a delayed reaction or serum sickness cannot be predicted, except in that some authorities feel that the size of the dose of antiserum determines the reaction, and if a large dose is given the recipient is almost sure to get serum sickness.

Since the spores of *Clostridium tetani* require anaerobiasis and tissue necrosis to reproduce, the most serious kind of injury is the puncture wound. Because these tetanus spores are frequently found in the excreta of farm animals and humans, there is a good chance of wound contamination with these organisms in any injury.

These facts have led some investigators to state that any individual who may be exposed to tetanus should be actively immunized. It has been shown that active immunization is an effective and practical means of preventing tetanus from developing. The experience of the armed forces has confirmed this and emphasized its importance. In one group of 100,000 non-immunized troops, there were 3,200 cases of tetanus while in another group of several hundred thousand immunized personnel, there were only 11 cases, and of these three had not been immunized and three had not been given a booster dose.

IT IS FOR these reasons that a program of tetanus immunization was instituted at the Belle, West Virginia, Plant of the E. I. du Pont de Nemours Company, of Wilmington, Delaware.

The product used was tetanus toxoid, alum-precipitated, Lilly. It has been shown that active immunization with alum-precipitated toxoid causes the production of circulating antitoxin which reaches a maximum in three to five months. This is retained for a variable length of time and then recedes. Once basic immunity has been established an additional or booster dose of the toxoid will cause a prompt rise in antitoxin.

This ability to respond is retained for years, even though the antitoxin titer is very low when the booster dose is given.

Our program is entirely on a voluntary basis. The immunizations are given as a medical service, and the cost is borne by the company. At the time the employee reports for his annual physical examination, he is told about the program, and if he elects to take it he is given .5 cc. of toxoid subcutaneously, and the second dose is given six to eight weeks later. When the second dose is given the man receives a small card stating that he has had tetanus immunization. This serves to remind anyone who might be called on to treat any future injury the employee might sustain that all he needs is a booster dose of toxoid.

The figures reflect our experience with the program from April, 1950, through September, 1951: 1,502 employees were immunized; 1,629 had been immunized in the armed forces; 1,241 declined to take the immunization.

Thus of 4,372 employees, 3,131, or 71.6%, are now actively immune. It might also be of interest to note that during this period we treated about 75 cases of puncture or other wounds in which tetanus prophylaxis with either antitoxin or a booster dose of toxoid seemed to us to be indicated.

Our experience with the toxoid was gratifying in that there were no reactions other than slight soreness which lasted for one to two days at the site of the injection.

SUMMARY: A program of tetanus immunization was instituted in April, 1950, at the Belle, West Virginia, Plant of the E. I. du Pont de Nemours Company. This was undertaken because of the number and severity of reactions encountered after the administration of tetanus antitoxin. After 18 months, 1,502 employees had been immunized. This, together with those employees who were in the armed forces, equals 71.6% of the total number of workers in the plant.

No serious reactions were seen.

[THE author wishes to express his appreciation to HENRY M. BROWN, M.D., and JAMES H. THORNBURY, M.D., for their help in carrying out this program.]

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Correlation of Blood Carbon Monoxide Level with Symptoms

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THE following is a report of 26 consecutive cases of carbon monoxide intoxication. This report is an attempt to show what correlation, if any, exists between carbon monoxide blood saturation levels and the symptoms and physical findings as seen in such cases.

In time of an emergency, such as asphyxia due to carbon monoxide, the first thought is to treat the patient rather than to obtain a blood sample for analysis for carbon monoxide saturation. If the blood sample is not taken almost immediately it becomes of less value as time passes. As soon as the patient is brought to the industrial dispensary following possible exposure to gas, oxygen therapy is started, and as soon as the mask is on the patient's face a blood sample is taken. The pyrotannic acid test using the MSA detector kit was used in the determination of the blood carbon monoxide saturation levels. This test is simple and easy to perform and can be easily taught to a laboratory assistant or nurse. The test requires only 15 minutes to obtain a result and is considered fairly accurate by Jacobs.[1] A brief summary of the pyrotannic acid method is as follows:

A bead of blood is withdrawn from a puncture wound made by a lancet, into a dilution pipette with a 0.1-cc. capillary stem. The 0.1 cc. of blood is diluted with 2 cc. of distilled water in the capillary bulb, making a 1:20 dilution. This blood is placed in a 2-cc. tube which contains a 0.04 gm. mixture of equal parts of pyrogallic acid and tannic acid. This 2-cc. tube is shaken and allowed to stand for 15 minutes. Then the tube is compared with a set of color standards which represent the color of blood having varying amounts of carboxyhemoglobin.

The frequency of the physical signs and symptoms that occurred in this series is shown in Table I. The lowest level of blood carbon monoxide recorded was 20%, and this also was the only incident in which there were no symptoms.

TABLE I.
FREQUENCY OF SIGNS AND SYMPTOMS IN 26 EXPOSURES

No symptoms	1
Headache	19
Light-headedness	6
Dizziness	12
Weakness	13
Knees buckled	8
Nausea	3
Vomiting	2
Collapsed	4
Respiratory paralysis	3
Loss of consciousness	2
Psychosis	1
Cherry red color	1

The highest blood carbon monoxide was 70%. There were no deaths.

Headache is usually the first and most frequent symptom. The patients may complain of light-headedness, with all degrees of headache up to a throbbing frontal headache, which is most characteristic of carbon monoxide exposure. With many employees entering the dispensary for aspirin tablets for headaches every day, it is difficult by the symptom of headache alone to pick out ones that may have been exposed to gas. The one thing that may help is to teach the nurses to know the man's job and its possibility of exposure, and to question the man carefully. When headache occurs with some form of asthenia such as weakness, dizziness, or buckling of the knees, then the possibility of carbon monoxide exposure is more apparent, and can be confirmed by the pyrotannic acid test. Nausea and vomiting are not frequent symptoms and are less likely to occur on an empty stomach; they are more apt to result if the exposure occurs soon after eating. These latter symptoms usually do not occur if the victim has been exposed to a sudden heavy concentration of gas and is quickly overcome, but rather when there has been a gradual exposure to a low concentration over several hours.

In no case did the patient collapse with a carbon monoxide blood level under 50%. By the term collapse, it is meant to indicate that the victim is overcome with such a feeling of weakness that he falls to the ground and is unable to move, although respiration and consciousness still remain, but usually fail shortly thereafter. Respiratory paralysis did not occur below 50% carbon monoxide blood level, and loss of consciousness did not occur below 60% blood carbon monoxide in this series. The only case in which a cherry-red color of the skin was observed occurred in a fair individual who had the highest blood CO level of 70%. This was also the only case in which a psychosis was observed. This latter case is summarized:

INCIDENT 15, Case A. A 24 year old white man placed his tool kit near a leaking carbon monoxide line and was found lying unconscious on the floor about 10 minutes later. He was dragged outside. The foreman noticed that his respirations were shallow, and started artificial respiration and gave him oxygen from a small emergency tank. After about five minutes he started to breathe spontaneously and was rushed to the plant hospital by stretcher, being given oxygen enroute. At the plant hospital 15 minutes

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after his last exposure the pyrotannic acid test showed a 70% CO blood saturation. While he was being given oxygen through an oro-nasal mask he lapsed from a semi-comatose state into deep coma. His pupils were widely dilated and fixed. His color was a mixture of cherry red and cyanosis. An airway was slipped into the pharynx, and he was aspirated at occasional intervals. Thirty minutes later the cyanosis faded, and 45 minutes later the cherry-red color started to fade. The patient started to thrash about and it required four men to restrain him. The eyes showed a rotary nystagmus, and the pupils reacted to light. One hour later the oxygen therapy was stopped. The patient became more violent, thrashing about in bed and shouting, but he was completely disoriented and did not respond to questions, and had hallucinations, and delusions. He was heavily sedated, and the following morning 19 hours later he had well recovered. There was no apparent mental loss, and he was discharged five days later. Laboratory reports: urine, normal appearance, specific gravity 1.021, sugar 0, acetone 0; sediment shows mucus and rare red cells; urea 11 mg %; sugar 71 mg %; hemoglobin 108%; WBC 9,500; prothrombin time 17.

The symptoms of carbon monoxide intoxication vary widely according to individual conditions, and if one is not alert to its possibility it can be easily overlooked, as illustrated by the following case:

INCIDENT 13, Case A. A 55 year old white man was working in a deep trench repairing a pipeline which he did not realize was leaking gas. He felt suddenly weak and reached up to climb out of the trench. His fellow workers saw his hand slip back and dragged him out. They carried him by stretcher to the plant hospital. On arrival, his skin was cold and clammy, pulse rapid and weak. Breathing was of Cheyne-Stokes type. He remained unconscious 10 to 15 minutes after oxygen was started.

He had gone to his family doctor the night before and had been given an injection. He had been told that "his heart was going too fast." He had had a history of hypertension, with a BP 170/100. It was first assumed that he had syncope due to hypertensive heart disease, but the pyrotannic acid test was taken as a precaution about five minutes after his last exposure. It showed a 60% CO blood saturation. A test at the pipeline where he was working showed a 1% concentration of carbon monoxide. For two hours he was given oxygen, followed by one hour's rest after which he was returned to light work.

The following case illustrates that respiratory paralysis may occur without loss of consciousness:

INCIDENT 2, Case A. A 34 year old white man entered a manhole wearing a safety belt, to work on an electric cable duct, and smelled gas. He climbed out of the manhole and collapsed on the ground. He was not unconscious, and remembered everything that was going on about him, but he could not move or breathe. He was given artificial respiration and 20 minutes of oxygen by the crew on the spot. He was assisted into a car and brought to the plant hospital. Twenty-five minutes after his last exposure a pyrotannic acid test showed 50% CO blood saturation. He was given oxygen for one hour and sent home recovered.

Table II is an attempt graphically to summarize the results of the exposure of the 26 cases to carbon monoxide. The symptoms across the top of the table are in an ascending order of

TABLE II.

Incident	Case No.	No Symptoms	Headache	Lightheaded	Dizziness	Weakness	Knees Buckled	Nausea	Vomiting	Collapsed	Respiratory Paralysis	Loss Consciousness	Lapse from Exposure to Test	Blood CO
12	D	+											15 min.	20%
12	B		+										5 min.	25%
5	B		+										15 min.	25%
3	B				+	+							15 min.	30%
10	A		+		+								10 min.	30%
12	I		+	+									30 min.	30%
14	A		+			+	+	+	+				45 min.	30%
12	C		+	+									10 min.	35%
12	E		+	+									20 min.	35%
12	G		+	+									15 min.	35%
12	H			+		+							20 min.	35%
11	A		+		+								10 min.	35%
8	A		+			+							5 min.	35%
4	A		+		+	+	+						5 min.	35%
1	A				+	+	+						10 min.	35%
14	B		+			+		+	+				2 hr.	35%
6	A		+					+					8 min.	40%
3	A		+		+	+							10 min.	45%
12	F		+			+	+						10 min.	45%
5	A				+	+							10 min.	45%
12	A		+		+	+	+						5 min.	45%
2	A			+	+	+	+			+	+		25 min.	50%
9	A		+		+	+							5 min.	50%
7	A		+		+	+	+			+			5 min.	55%
13	A		+		+	+	+			+	+	+	5 min.	60%
15	A*		(Had cherry red color)							+	+	+	15 min.	70%

*Patient overcome rapidly—had a psychosis lasting 19 hours after exposure.

TABLE III.
LENGTH OF OXYGEN THERAPY IN 16 CASES OF CARBON MONOXIDE ASPHYXIA

CO Blood Saturation	Duration of Oxygen Therapy in Minutes
25%	30 mins.
30%	30 mins.
30%	30 mins.
30%	45 mins.
35%	30 mins.
35%	30 mins.
35%	30 mins.
35%	30 mins.
35%	45 mins.
40%	30 mins.
45%	60 mins.
50%	60 mins.
55%	22 mins.
60%	60 mins.
70%	60 mins.

severity, and the concentrations of the blood carbon monoxide on the right side are also arranged in ascending order. The "Lapse from Exposure to Test" is an estimate of how soon the test was taken after the last exposure to carbon monoxide. The shortest time was five minutes and the longest was two hours after the last exposure. The "Incident" refers to the accident which caused the exposure in which one or more individuals were involved. In Incident 12 there were nine individuals exposed at the same time.

One may question how a man with 50% blood carbon monoxide saturation could be still conscious, and in one case even walking. At rest the body only uses approximately one-third of the oxygen carried by the blood and about two-thirds when the body is working. This gives a reserve supply of oxygen. It is also known that the third stage of anoxia is reached at a 10% oxygen tension level, and the victim may still be conscious and walking, although staggering. This situation is similar to the condition produced by 50% blood saturation with carbon monoxide.

If a victim is removed from an atmosphere of carbon monoxide and placed in the fresh air, the carbon monoxide level falls slowly due to its tenacity with the red blood cell. It has been roughly stated that if a victim is just placed in the fresh air, his blood level will only fall to half the original level in one hour.

Oxygen therapy is the treatment of choice. In these cases 100% oxygen was given with an oro-nasal mask. In Table III the duration of oxygen therapy necessary to achieve clinical recovery in 16 cases is shown. The average duration of oxygen therapy of 38 minutes was necessary. It is estimated that the patient still has about 15% blood CO present, when he no longer has any symptoms. Carbogen (93% oxygen and 7% carbon dioxide) is recommended treatment by some for stimulation of the lagging respiratory center. Although we had carbogen available it was not used in any case in this series.

Every precaution has been taken to protect employees from exposure to carbon monoxide at this plant. All men working near carbon monoxide gas are instructed as to its hazard and in methods of resuscitation of a victim. Oxygen inhalation equipment is placed throughout the plant for immediate use in any emergency. All men going into a manhole or other dangerous confined area, must test for carbon monoxide gas using an MSA Colormetric Carbon Monoxide Tester. In areas where there is a heavy usage of carbon monoxide gas an MSA Carbon Monoxide Gas Alarm is placed. This CO alarm is set to ring at 400 ppm of CO. Recently ethyl mercaptan has been added in a concentration of 35 ppm as an odorant to the carbon monoxide gas further to protect the employees and to warn them of the presence of carbon monoxide gas. In spite of every precaution one must always be alert to the possibility of carbon monoxide poisoning.

SUMMARY: This has been a report of 26 cases of intoxication by carbon monoxide attempting to show the correlation, if any, between symptoms and physical findings seen, and carbon monoxide blood saturation levels.

It is concluded that there is no close correlation of physical findings and symptoms with carbon monoxide blood levels. The physiological reactions to carbon monoxide may vary with the state of health of the individual, or the presence of fatigue. In some cases frequent small exposures to carbon monoxide may develop a considerable degree of acclimatization, and thus alter the physiological reactions to carbon monoxide.

(137—4th Street.)

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New Push-Pull Methods for Pole Top Resuscitation

— Comparative Studies —

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EFFICIENT laboratory methods for accurately determining the effectiveness of artificial respiration have crystallized most issues regarding manual resuscitation.[1,2] Recently, numerous corroboratory studies have established the unequivocal superiority of push-pull techniques over push only and pull only maneuvers.[3-11] As a result, almost all national and Federal agencies have endorsed the use of these methods.[12-14]

The natural outgrowth of this has been the suggestion by several groups in the electrical industry that the push-pull principle be applied to pole-top resuscitation. Adequate appraisal of the ventilatory efficiency of these proposed methods requires comparative studies on subjects who actually simulate victims requiring resuscitation. Previous tests in this laboratory have validated the use of totally apneic, curarized-anesthetized, normal adults for this purpose. This report details their use again in comparative studies of standard pole-top, push-pull pole-top, and prone manual resuscitation methods.

General Methods

FIVE normal, healthy, adult volunteers were used as subjects. They ranged in age from 21 to 26 years; were between 70 and 72 inches in height; and, their weight range was from 150 to 180 pounds.

Following pre-anesthetic atropinization (gr. 1/100), they were curarized-anesthetized to total apnea by the method previously reported by this group.[15] Each was rendered unconscious and in a flaccid state of respiratory arrest by the intravenous injection of Pentothal sodium® (0.5 gm.) and d-tubocurarine chloride (15 mg.) as a single dose over approximately one-half minute. An endotracheal tube, well lubricated with a water-soluble anesthetic ointment, was inserted into the trachea to maintain a clear airway at all times. This was secured by adhesive tape and an inflatable cuff, which was expanded to assure a gas-tight system. The tube was connected to a carefully balanced recording spirometer* by means of which pulmonary ventilation was measured. The subject was then placed in position for the type of artificial respiration to be studied.

After each method of artificial respiration had been performed, or at any indication of the return of spontaneous respiration, cyclopropane-oxygen mixtures were administered by intermittent positive pressure from a standard anesthesia machine. This maintained oxygenation and supplemented the curare-produced apnea.

After completion of the series of tests on each subject, nitrous oxide-oxygen was administered by intermittent positive pressure on the rebreathing bag until spontaneous respirations were adequate and muscular tone had returned. Tracheobronchial aspiration and extubation were then performed. All subjects were up and walking within one and a half hours, and were permitted to leave under supervision shortly thereafter.

METHODS OF ARTIFICIAL RESPIRATION STUDIED: The vital capacity and tidal volume were determined in each case during the pre-test resting, conscious state. Then a complete series of methods was performed on each totally apneic subject. In order to provide a basis of comparison between these studies and previous tests, and also between pole-top and standard methods, the Schafer method and two of the recommended push-pull methods (arm-lift back-pressure, hip-lift back-pressure) were performed on each individual in addition to the standard pole-top and the four suggested push-pull pole-top maneuvers.

All of the prone manual methods were applied by the same operator. The standard pole-top method and its modifications were performed on each subject by one of two trained, experienced utility linemen. The methods were rotated in the order of performance. The Schafer and standard push-pull methods were performed with the prone apneic subject on the unpadded floor. For the standard and push-pull pole-top methods he was secured by a lineman's belt and safety strap to a specially erected pole (Figs. 1 and 2).

SCHAFER PRONE PRESSURE METHOD: Until recently this well-known and easily performed method was preferred in this country. It is a push only technique which results in active expiration and passive inspiration. The operator straddles one or both legs of the prone victim, who is placed with the elbows flexed and the face turned to the side, resting on the back of one hand. The operator places his hands, with the fingers to-

These studies were accomplished with the technical assistance of MR. JOHN E. APPEL, Supervisor of Safety, and members of the Construction Department, Commonwealth Edison Company.

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® Abbott Laboratories.

*Drinker-Collins Respirometer.

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Fig. 1.
Facilities for pole-top resuscitation studies. Subject at left on wheeled litter awaits anesthetization-curarization. Anesthesia machine ready to administer cyclopropane-oxygen mixtures after completion of each method, or at the return of spontaneous respiration. At right is spirometer for recording pulmonary ventilation. In foreground, telephone pole is ready for testing pole-top methods.

Fig. 2.
Totally apneic, anesthetized-curarized subject astride rescuer's safety-belt for application of pole-top resuscitation methods.

gether, over the floating ribs. He then rocks forward, exerting moderate pressure for approximately two seconds. The pressure is then released to complete a five-second cycle.

Previous studies in this laboratory[16] have shown that back-pressure over the mid-back, (at the lower tips of the scapulae) with the fingers spread and the thumbs near the spine, results in one and one-half times as much pulmonary ventilation as standard prone pressure. Accordingly, both prone pressure and back-pressure were evaluated here.

ARM-LIFT BACK-PRESSURE METHOD (Back-Pressure Arm-Lift): This push-pull method, modified from the Danish Nielsen,[17] also uses the prone position. However, for this technique the victim's arms are flexed, the hands placed upon each other, the head turned to one side and placed on the backs of the hands (Fig. 3).

The operator kneels, facing the victim and at his head. He may kneel on either knee, or on both if this is more comfortable. The operator places his hands under the arms of the victim just above the elbows. He then rocks backward, keeping his elbows straight and drawing the victim's arms upward and toward himself. This lift is continued until firm resistance is met. The arms are then replaced on the ground and the operator moves his hands to the patient's back. He places his hands over the mid-back with the fingers spread downward and outward, the thumbs touching at the spine and the heels of the palms at the level of an imaginary line between the two axillae. He then rocks forward, keeping his arms straight, and allows the weight of the upper part of his body to exert steady, gradual pressure almost vertically downward upon his hands until he meets firm resistance. The operator then rocks backward and repeats the cycle. Each phase of the cycle occupies an equal amount of time, and 10 to 12 cycles are performed per minute.

The arm-lift results in active inspiration by: (1) tensing the pectoral musculature, which pulls on the ribs, resulting in a widening of the intercostal spaces; (2) relieving the weight of the body from the sternum, which allows increase in the transverse and anteroposterior diameters of the chest; and (3) slightly hyperextending the spine, thereby inducing further widening of intercostal spaces. Back-pressure produces active expiration.

HIP-LIFT BACK-PRESSURE METHOD: For this push-pull method, the operator kneels on either the right or the left knee at the level of the patient's hips. The other foot straddles the victim and is placed on the ground near his opposite hip. Thus, the heel is directly opposite the kneeling knee (Fig. 4). The operator places his hands under the victim's hips and lifts them upward approximately four to six inches. This allows the abdomen to sag downward; the diaphragm descends, and air is actively sucked into the lungs. The operator's arms are kept straight during the lift so that the work is done by

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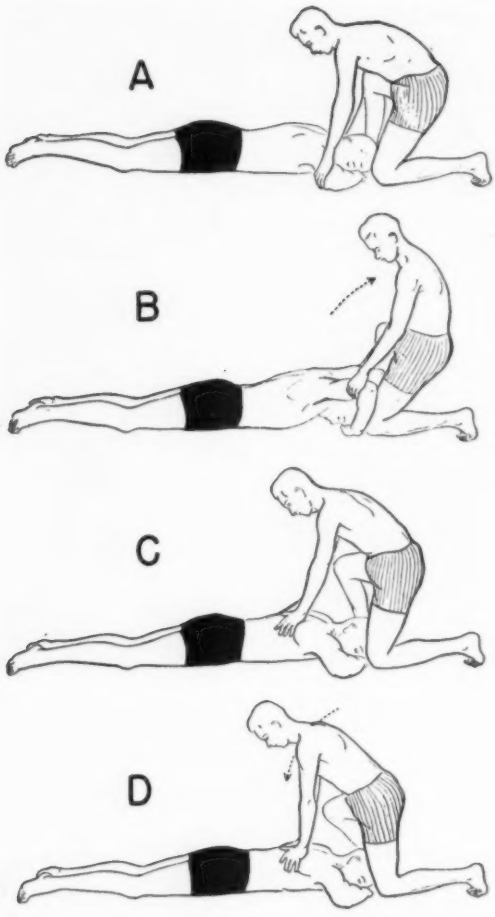

Fig. 3.
Arm life-back pressure method of manual artificial respiration (after Holger Nielsen). A—placing hands for arm lift. B—arm lift. C—placing hands for back pressure. D—back pressure.

the shoulders and back rather than by the arms. The hips are then replaced on the ground and the hands are moved to the mid-back, over the lower tips of the shoulder blades. The operator then rocks forward and allows the weight of the upper part of his body to exert gradual pressure almost vertically downward until he meets firm resistance. The fingers are kept spread, and the thumbs almost touch at the spine. The elbows are also kept straight during the back-pressure phase. Ten to 12 complete cycles per minute are performed.

An adjunct, such as a belt, rope, towel, etc., may be used under the hips to assist in lifting.

POLE-TOP METHOD: This method for resuscitating linemen shocked on the poles has found wide and successful application since its description by Oesterreich in 1931.[18] Immediate application of manual artificial respiration on the pole eliminates the tragic delay involved in first lowering the victim to the ground.

The studies of Kouwenhoven, Hooker, and Langworthy[19] showed that the pole-top method gave greater ventilation than Schafer prone pressure in volunteers with passively suspended respiration.

More recently, Gordon et al, used totally apneic, curarized-anesthetized subjects to substantiate this finding.[16]

In the performance of pole-top resuscitation, the rescuer immediately ascends to the victim. He secures his safety strap around the pole and places the victim astride it between himself

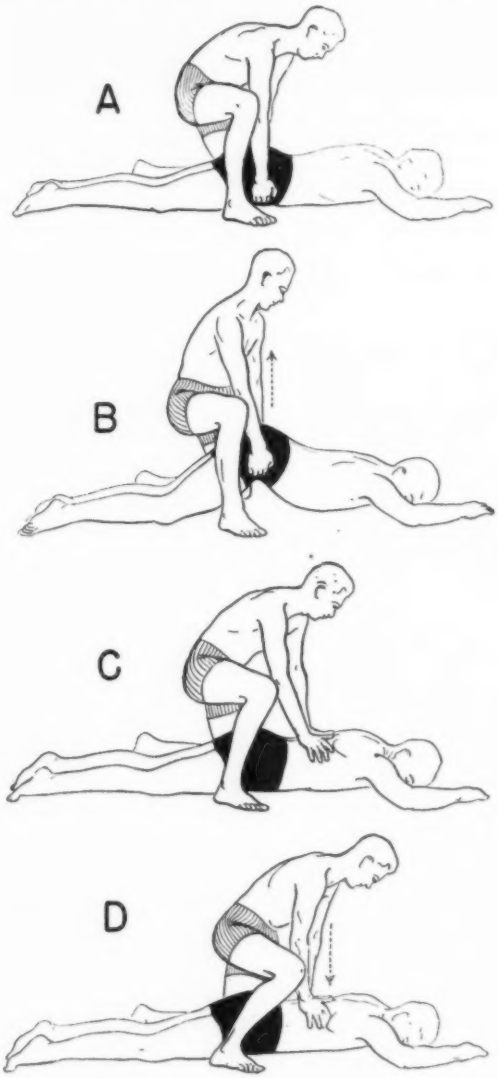

Fig. 4.
Hip lift-back pressure method of manual artificial respiration. A—placing hands for hip lift. B—hip lift. C—placing hands for back pressure. D—back pressure.

Fig. 5.
Double-rock method of push-pull pole-top resuscitation.
A—placing hands for expiratory phase.
B—rocking backward during expiration.
C—placing hands for inspiratory phase.
D—rocking backward during arm-lift to induce inspiration.

and the pole. He encircles the waist of the victim with his arms, placing both hands on the abdomen, thumbs below the lower ribs and fingers touching. With his arms and hands, he compresses the victim's abdomen in an upward motion. At the finish of the stroke, the hands are cupped with the fingers depressing the abdomen under the rib margin. The pressure is quickly released and reapplied at a frequency of 12 to 15 times per minute.

PUSH-PULL POLE-TOP RESUSCITATION METHODS: Mr. John E. Appel, Supervisor of Safety, Commonwealth Edison Company, suggested that application of the push-pull principle to pole-top resuscitation would significantly increase pulmonary ventilation by producing active inspiration as well as active expiration. This led to the development of several modifications by his staff. These push-pull pole-top maneuvers are referred to by their descriptive terms: (1)

TABLE I.
PULMONARY VENTILATION WITH MANUAL ARTIFICIAL RESPIRATION

State	Method	Variation	Ventilation (cc/respiration)*
Conscious Resting	Normal	Tidal Volume	514
		Vital Capacity	4286
	Schafer	Prone pressure	382
		Back-pressure	572
	Pole-top	Standard	646
		Push-pull	
Unconscious Apneic		Double-rock	1044
		Single-rock	1012
		Forward-rock	902
		Arm-grasp	1012
	Prone Push-pull	Arm-lift back-pressure	1144
		Hip-lift back-pressure	1128

*Mean values for five, normal, healthy, adult male volunteers. All methods performed on all subjects at rate of 12 times per minute.

Double-rock; (2) Single-rock; and (3) Forward-rock.

Concurrently, Mr. Ralph J. Young, Safety Engineer, Public Service Company of Indiana, suggested another manipulation for application of push-pull resuscitation on the pole. This is referred to as the Arm-grasp.

Recently, Karpovich and Hale have evaluated and recommended a push-pull modification of pole-top resuscitation.[20] However, they used conscious volunteers, and compressed the chest rather than the abdomen for the expiratory phase.

1. *Double-rock Method* (Fig. 5): The rescuer places the victim astride his safety belt as for the standard pole-top method. After encircling the victim's waist with his arms and placing both hands on the abdomen, he compresses the victim's abdomen with an upward motion, as described above. The operator enhances this active expiration by a backward rock of his shoulders and upper body. He then releases the pressure and rocks forward to the resting position.

The rescuer then moves his hands upward over the victim's chest with his forearms in the axillae. He now rocks backward a second time and simultaneously draws his arms upward and backward. This lifts and stretches the victim's arms, widening the intercostal spaces by tensing the pectoral musculature and thereby producing active inspiration. The complete cycle is repeated 10 to 12 times per minute.

2. *Single-rock Method:* This modification is performed exactly like the double-rock except that the operator rocks backward only during the arm-lift or inspiratory phase. During the abdominal compression, or expiratory phase, he maintains his stationary upright posture.

3. *Forward-rock Method:* In this suggested method, the rescuer performs as for the double-rock, with one exception. In order to try to increase the expiratory phase, he rocks forward during the abdominal compression, maintaining the backward-rock during the arm-lift, or inspiratory phase.

4. *Arm-grasp Method:* This maneuver parallels the double-rock method. However, at the beginning the operator grasps the wrists of the victim in his hands. (He can grasp the victim's right and left wrists with his right and left hands, respectively, or he can cross the victim's hands and grasp the right and left wrists with his left and right hands, respectively.) The operator compresses the victim's abdomen while retaining his grasp of the wrists. He then lifts and draws back the victim's arms by raising the wrists and drawing them backward. During the complete cycle, and from cycle to cycle, he retains his hold on the wrists.

Results

THE MEAN values for the pulmonary ventilation achieved by all methods in all five subjects are listed in Table I. As in all previous studies by this group, the prone push-pull methods give two to three times as much pulmonary exchange as the push only methods. The value for Schafer prone pressure is somewhat lower than usually attained by us in this type of subject. However, the earlier observation is substantiated that back pressure, alone, gives one and one-half times as much ventilation as prone pressure, alone. There is no statistically significant difference between the ventilatory efficiency of the two prone push-pull methods employed here.

The standard pole-top method was superior to Schafer prone pressure and back pressure, and approximately equal to results obtained in our earlier studies.[16] All of the push-pull pole-top methods were one and one-half times as efficient as the standard pole-top method, as regards pulmonary ventilation. Only the forward-rock method fell somewhat short of this achievement. The respiratory pattern obtained with each of the methods is shown in Fig. 6. Utilization of only the expiratory reserve volume is evident with Schafer prone pressure, back pressure and standard pole-top methods.

Since three of the push-pull pole-top methods are equally superior to the standard pole-top technique, it becomes necessary to find some other criterion to use in the delineation of the best method. Accordingly, each of the utility linemen was questioned when he finished each series of tests on the pole. Throughout the tests they remained in agreement that the arm-grasp method was most difficult to perform. They found it awkward to perform the abdominal compression while grasping the victim's wrists. In addition, it was found to be physically tiring and more than a little difficult to maintain a grasp on the victim's wrists during the arm-lift. These factors were reflected in the respiratory graphs taken during the performance of this method. Slipping of the wrists, and the necessity for taking frequent new and firmer holds, resulted in the production of numerous artifacts in the breathing curves. On the contrary, both the double-rock and single-rock

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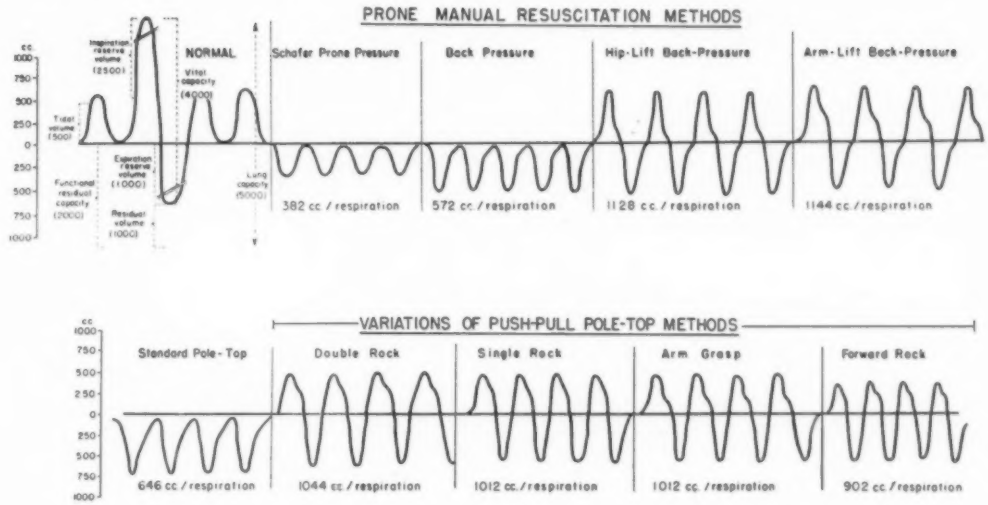

Fig. 6.
Pulmonary ventilation achieved with various methods of manual artificial respiration in five totally apneic, curarized-anesthetized, normal adult males.

methods produced smooth, reproducible curves.

Of these two remaining methods, it was found to be easier to maintain a regular, smooth, easy rhythm with the double-rock method than with the single-rock. Although it was difficult to distinguish between the fatigue resulting from these two modifications, both operators felt as if they could perform the double-rock method longer, more steadily, and more smoothly.

Comment

THE findings observed here justify the recommendation that push-pull pole-top resuscitation methods should supplant the standard pole-top method (push only) wherever and whenever applicable. Of these, the double-rock maneuver for inducing active inspiration and active expiration appears to be the best modification. Although it would seem that the forward-rock should produce greater expiratory volume, owing to additional abdominal compression, this did not prove to be the case. It may be attributed, perhaps, to awkwardness in performing a forward-rock on the pole. The arm-grasp is unnecessarily difficult and results in interruptions of the respiratory pattern.

The addition of an active inspiratory phase should result in increased alveolar ventilation with the push-pull methods. In the presence of an efficiently functioning circulatory system, this augmented alveolar ventilation would improve the ventilation-perfusion ratio of the lungs and result in an elevated arterial oxygen saturation. This has been demonstrated with the prone push-pull methods.[9]

Furthermore, a failing circulatory system should be improved by the push-pull pole-top methods. During active expiration, compression of the abdomen should have a massaging or "milking" action upon the viscera, tending to direct the blood flow toward the heart and to prevent vascular pooling in the splanchnic area. During active inspiration the arm-lift increases intrathoracic negativity by enlarging the anteroposterior diameter of the thorax. This will aid cardiac refill by drawing blood toward the heart.

Despite these observations regarding the circulatory benefits accruing from push-pull maneuvers, it is still felt that push-pull pole-top methods should be started at once; but the victim requiring prolonged artificial respiration should be lowered to the ground as quickly as is practical, and one of the prone push-pull methods started. The vertical position on the pole favors vascular collapse, and the less deleterious prone position is to be preferred as soon as it can be achieved.

Although a rate of 12 complete cycles per minute seems optimal, the increased length of the cycle and the increased exertion may frequently necessitate a rate of 10 cycles per minute. With prolonged usage and growing fatigue, the operator may have to reduce his pace to eight cycles per minute. In the absence of an assistant, if a rescuer becomes exhausted while performing the push-pull pole-top method for a long period of time, he can retreat to the easier standard pole-top maneuver briefly, until he feels that he can resume the push-pull technique.

As soon as the victim can be lowered to the ground, the arm-lift back-pressure or hip-lift back-pressure method should be performed until spontaneous respirations return or he is pronounced dead. When breathing returns, even if at a slow rate, the operator must synchronize his manipulations with the victim's efforts. Even after normal breathing has returned, the victim

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must be kept in a horizontal position until definitive medical care has arrived.

The arm-lift phase of the push-pull pole-top methods resulted in some chafing of the skin of the axillary and pectoral regions of these subjects. This will undoubtedly be noted in field application of these new methods. However, this slight soreness is a price well worth paying for the additional benefits of the improved methods.

It has been noted that when the apneic subject is shifted from the horizontal to the vertical, the diaphragm descends somewhat and the resting lung volume is increased. To this fact is due, at least in part, the greater expiratory volume achieved with the standard pole-top method than with the prone pressure or back-pressure methods. In these studies an attempt was made to determine the exact amount of increase in the resting lung volume level during the shift in position. However, the pressure of working with totally apneic human subjects and various technical difficulties prevented our making this determination.

Summary

1. PUSH-PULL pole-top methods have been evaluated on five normal, healthy, adult males in a totally apneic, unconscious state induced with curare-anesthesia mixtures.

2. All push-pull pole-top methods are found to be one and one-half times as efficient, as regards pulmonary ventilation, as the standard pole-top method.

3. Of the push-pull pole-top methods, the double-rock is generally the most applicable, with respect to pulmonary ventilation, ease of performance, rhythm and operator fatigue.

4. In addition, the push-pull pole-top methods should materially benefit a failing circulatory system. However, the dictum must be retained that pole-top resuscitation having been begun, the victim should be brought to the ground as soon as possible and manual artificial respiration continued, using one of the prone push-pull methods.

(1853 West Polk Street.)

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Attitudes

A CONSTANT problem in an executive health program is the difficulty in influencing executives to improve their attitudes and activities so as to safeguard their health. The routine performance of given duties over a prolonged period so establishes habits of thinking and acting that it is difficult and often distasteful to change them. The individual either convinces himself that such changes are unnecessary or puts them off. An executive of this type is a poor risk for promotion or transfer. He is an excellent candidate for a physical or mental breakdown.

—From "Executive Health for Company Wealth," by ROBERT C. PAGE, M.D., in *Dun's Review*, April, 1952.

Problems Peculiar to a Small Industrial Hospital in an Isolated Area

ARLOS R. SEDGLEY, and ROBERT A. HICKS, M.D.
Resident Manager Resident Physician

HEAVY construction work in continental United States is unlikely to introduce outstanding differences in medical requirements on any sectional basis. By and large, the same medical program would be effective in Vermont or Mississippi. It is true that work in Mississippi might entail control over malarial or hookworm exposures while in Vermont the rigors of winter might introduce difficulties unknown in Mississippi. All such are but the ponderables of sectional medical activities.

Not equally is this true for heavy construction work conducted on a pinpoint Pacific island with the chief work population transported from the United States. On the Eniwetok Atoll it became desirable to erect substantial masonry structures to test out the damage of atom bombing on different forms of installation. For this purpose a force of some 1500 individuals were recruited, with about 80% from the United States and 20% from Hawaii. This shifting to a tropical climate little affected the Hawaiian group, but notably involved the United States group which proved particularly vulnerable to tropical skin diseases, notably fungal diseases, and to nervous and mental states incident to highly isolated living little accompanied by diversional recreation and normal human society. It may be believed that such a work population from the United States embraced many individuals not typical of the stable American labor type, and in many instances already the victims of the struggles and complexities of modern life in the United States. This is the story of industrial medical activities in a small hospital operated to meet these exigencies.

THE AUTHORS found in their command problems of the operation of a 20-bed hospital serving approximately 1000 men on a construction project in the South Pacific that many special considerations developed which were entirely distinct from the problems characteristic of a state-side hospital, industrial or otherwise. This paper is prepared with a view to reporting their solutions to date of these problems.

The purpose of such a hospital is three-fold. First, it must always be outstandingly a medical and surgical institution. No considerations of medical-legal problems must be allowed to supersede this primary function. The second purpose is to promote and continually to bolster the general morale of employees far from home, frequently devoid of diversions, subject over long periods of time to great mental depression. This morale building function is best accomplished by the friendly cheerful attitude of all people working in the hospital. Men coming in must be made to feel at home. If they represent different races to any serious proportion, a member of the possibly less enlightened race must be employed in the hospital, with special instruction to make the men of his color happy. No man on the job must ever feel a reluctance to make sick call, or to report in promptly after an emergency. The third function of the hospital, particularly through its medical staff, is to cooperate with the management and the safety engineer in the supervision, development, and constant inspection of all matters relating to sanitation. A weekly inspection of all physical structures in any way related to sanitation must be performed and a summative written record of the significant findings submitted to the management, together with a notation as to the length of time such defective equipment or unsanitary condition may have been present. It is particularly wise if all key men in the organization be instructed to be on the lookout for conditions of poor sanitation, and to report all such observations to the medical officer so that every matter of sanitation will clear through his desk. The fly and insect control problem is one which constantly undergoes progressive change as improvements are developed. The most recent advances may always be learned by contacting the U. S. Public Health Service, Atlanta Branch, Atlanta, Georgia. It is rarely necessary to employ a full-time expert in sanitation, as any medical officer can handle this problem. Every matter which needs routine control may be guided by the War Department field manual obtainable from the War Department under the heading of "Military Sanitation," FM 21-10.

The problems of a hospital of this type are different from those of a general hospital again because of the nature of the personnel served. The problem of pre-hire physical examination has been extensively dealt with by a great many companies employing men on overseas contracts. Many blanks and forms have been developed, each one distinct for an individual company or insurance carrier. All of these have splendid features, but none is the equal of the Form 88 which is now standard throughout Army, Navy, and Air Force military personnel. Form 88 is available to anyone at the Bureau of the Budget, Washington, D.C. (Sandard Form 88, Circular A-24). Certain notations must be made to eliminate selective service number columns, etc., which are entirely military in character. It is necessary to add to this blank a statement concerning the presence or absence of previous insurance disability collections and matters relative to pensions, past or present, from active military service. Naturally, emphasis of either

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REPORT OF MEDICAL EXAMINATION

1. Last Name—First Name—Middle Name		2. Grade and Component or Position	3. Identification No.
4. Home Address *(Number, street or RFD, city or town, zone and State)*		5. Purpose of Examination	6. Date of Examination
7. Sex	8. Race	9. Total Yrs. Govt. Service: Military / Civilian	10. Department, Agency, or Service / 11. Organization Unit
12. Date of Birth	13. Place of Birth	14. Name, Relationship, and Address of Next of Kin	
15. Examining Facility or Examiner, and Address		16. Other Information	
17. Rating or Specialty		Time in this Capacity: Total	Last Six Months

CLINICAL EVALUATION

Notes.—Describe every abnormality in detail. (Enter pertinent item number before each comment; continue in item 73 and use additional sheets if necessary.)

Normal	Abnormal	*(Check each item in appropriate column: enter "N.E." if not evaluated)*
		18. Head, Face, Neck and Scalp
		19. Nose
		20. Sinuses
		21. Mouth and Throat
		22. Ears—General *(Int. & ext. canals) (Auditory acuity under items 70 and 71)*
		23. Drums *(Perforation)*
		24. Eyes—General *(Visual acuity and refraction under items 59, 60, and 61)*
		25. Ophthalmoscopic
		26. Pupils *(Equality and reaction)*
		27. Ocular Motility *(Associated parallel movements, nystagmus)*
		28. Lungs and Chest *(Include breasts)*
		29. Heart *(Thrust, size, rhythm, sounds)*
		30. Vascular System *(Varicosities, etc.)*
		31. Abdomen and Viscera *(Include hernia)*
		32. Anus and Rectum *(Hemorrhoids, fistulae) (Prostate if indicated)*
		33. Endocrine System
		34. G-U System
		35. Upper Extremities *(Strength, range of motion)*
		36. Feet
		37. Lower Extremities *(Except feet) (Strength, range of motion)*
		38. Spine, other Musculoskeletal
		39. Identifying Body Marks, Scars, Tattoos
		40. Skin, Lymphatics
		41. Neurologic *(Equilibrium tests under item 72)*
		42. Psychiatric *(Specify any personality deviation)*
Females only		*(Check how done)*
		43. Pelvic — Vaginal — Rectal

of these last two subjects strongly predisposes against employment. Form 88 has amazing adaptations to the routine problems of the hard work in construction projects. It emphasizes the use of the audiometer, an electronic mechanical device capable of grading and measuring exactly the diminished functions of hearing so frequently seen in the tropics in association with fungus disease of the ear. The importance of this record cannot be over-emphasized from the standpoint of disability insurance matters. It is not possible here to set up any standard form covering an S.O.P. for disqualifying defects, but such an S.O.P. must be a constantly observed part of the pre-employment study.

The use of the waiver system for individual defects in valuable personnel remains successful in degree in the Armed Forces, and is employed by many corporations. It has its undesirable phases, but in any case makes a strong presumption against recovery from aggravation of a disability known to exist prior to employment.

It is an obvious necessity that perfect copies of an employee's statement to the examining physician, as well as the physical findings at the physical examination, must accompany the employee to the job-site and be available continuously to the medical officer involved at the job-site.

OUR industrial hospital must arrange for a briefing of every individual of incoming personnel concerning health at the project site, availability of hospital emergency and routine facilities, and any other question which may come up as a new employee presents himself.

44. Dental *(Place appropriate symbols above or below number of upper and lower teeth, respectively)* — *o.—Restorable teeth* — */.—Nonrestorable teeth* — *X.—Missing teeth* — *XXX.—Replaced by dentures* — *(6 x 8).—Fixed bridge, brackets to include abutments*

RIGHT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	LEFT
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	

Remarks and Additional Dental Defects and Diseases

Laboratory Findings

45. Urinalysis: Sp. Gr. — Albumin — Sugar — Microscopic

46. Chest X-ray *(Place, date, film number, result)*

47. Serology *(Specify test used and result)*

48. EKG

49. Blood Type and RH Factor

50. Other Tests

Standard Form 88—(Front)

Measurements and Other Findings

51. Height | 52. Weight | 53. Color Hair | 54. Color Eyes | 55. Build: Slender ☐ Medium ☐ Heavy ☐ Obese ☐ | 56. Temp.

57. Blood Pressure *(Arm at heart level)* | 58. Pulse *(Arm at heart level)*

Sitting Sys./Dias. Recumbent Sys./Dias. Standing *(3 min.)* Sys./Dias. | Sitting After Exercise 2 Min. After Recumbent After Standing 3 Min.

59. Distant Vision | 60. Refraction | 61. Near Vision

Right 20/ Corr. to 20/ By S. CX Corr. to By

Left 20/ Corr. to 20/ By S. CX Corr. to By

62. Heterophoria: *(Specify distance)* ES° EX° R.H. L.H. Prism Div. Prism Conv. PC PD

63. Accommodation Right Left | 64. Color Vision *(Test used and result)* | 65. Dept Perception *(Test used and score)* Uncorrected Corrected

66. Field of Vision | 67. Night Vision *(Test used and score)* | 68. Red Lens | 69. Intraocular Tension

70. Hearing | 71. Audiometer | 72. Psychological and Psychomotor *(Tests used and score)*

Right WV /15 SV /15
Left WV /15 SV /15

	250	500	1000	2000	3000	4000	8000
	256	*512*	*1024*	*2048*	*2896*	*4096*	*8192*
Right					////		
Left					////		

73. Notes *(Continued)* and Significant or Interval History

(Use additional sheets of plain paper if necessary)

74. Summary of Defects and Diagnoses *(List diagnoses with item numbers)*

75. Recommendations—Further Specialist Examinations Indicated *(Specify)* | 76. Physical Profile P U L H E S

77. Examinee *(Check)* ☐ Is ☐ Is Not Qualified for | Physical Category

78. If not Qualified, List Qualifying Defects by Item Number | A B C E

79. Typed or Printed Name of Physician | Signature

80. Typed or Printed Name of Physician | Signature

81. Typed or Printed Name of Dentist or Physician *(Indicate which)* | Signature

82. Typed or Printed Name of Reviewing Officer or Approving Authority | Signature | Number of Attached Sheets

Standard Form 88—(Back)

Health hazards at the job-site are stressed in this incoming personnel briefing.

At termination of employment, a policy must be adopted concerning stateside final termination medical examination or examination at the job-site. Frequently, both may be necessary, and no employee should leave the job-site without a suitable statement from the medical officer there if he has had any significant illness or injury.

The organization of the hospital is a simple one. A single medical officer may direct and also do the actual medical work throughout if he is fortunate enough to have competent first aid personnel or male nurses to the extent of 12. Three clerks are a most important part of the complement; their function will be discussed later. Should the hospital be far removed, two medical officers may be necessary, solely from the standpoint of reserve, but frequently this reserve may be established by a stateside doctor acting as Medical Director for the company and remaining, himself, in reserve to substitute, if necessary, at the job-site. This Medical Director must, of course, coordinate all medical matters between the job-site hospital and the stateside medical set-up. The organization of the hospital involves responsibility of the Medical Director to the senior project manager without a secondary channel between the two. The medical officer must solve his own problems, conduct his own institution by and with the consent and help of the job-site management.

The individual functions of the various departments of the hospital are similar to those of any hospital and will be mentioned below. The problem of referred work from the hospital is most important and must be worked out in great detail. In a small isolated institution specialist service can never be available, and matters of transportation pay and the specialist to whom a referred patient must report must all be worked out well in advance.

The matter of private practice on the part of the medical officer in dealing with elective conditions in the personnel must be openly established as part of the company policy and ordinarily, inasmuch as the company will be maintaining the physician on salary and also providing him with working space, fees for elective work must be adjusted downward accordingly. This particular problem is important also as a matter of established policy for the dental department as well as the medical. Humanitarian dentistry only is the ordinary practice, whereas restorative and other elective work may be regarded as private practice.

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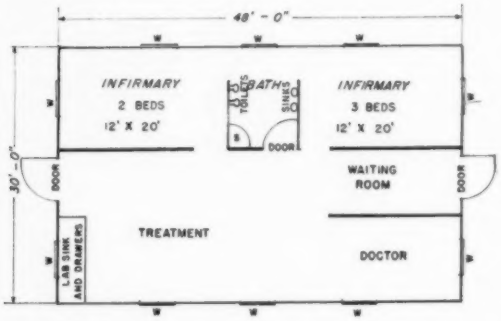
At a project such as we are considering the lost hours from dental disease may nearly equal those lost from medical sources. Again it may be well to emphasize here that an S.O.P. with regard to dental qualifications in pre-employment examination must be set up.



THE floor plan of the hospital is best developed along the lines of the 20-bed military hospitals of the last war, giving private and semi-private rooms, with 20 beds considered adequate for the needs of 1000 men. The main building over-all dimension, including medical and dental departments, except bulk reserve storage, may be 30 ft. x 120 ft. Such floor plans are available from the office of the Surgeon General of the Army Medical Corps. We submit a plan for a simplified dispensary, possibly for use in a dispersed area, to provide great accessibility for outlying personnel. It will be noted in this building, measuring over-all 30 ft. x 48 ft., that there are only four doors and four partitions. Ingress and egress for all areas are simple, swift, and certain. The economy of this structure is well proved, as well as its effectiveness in operation. We do not mean to confuse this outlying dispensary, with five beds only, with the main building where 20 beds are available, together with diagnostic facilities, etc.

The various departments of the hospital will not be taken up in detail, but the characteristics of each department which serve to distinguish the functions of this type of hospital from a general one will be mentioned.

The admitting office may well prove to be the biggest problem of administration. Under certain conditions it may be impossible to establish that time has been lost, so that the timekeeping department will depend upon written information in card form as to when a man leaves the job, when he enters sick bay, and the hour at which he is able to return to duty. Unless this written system initiated by a foreman can be reasonably perfect, it may be a hazard to the time department, this department coming to depend on these cards the prompt delivery of which under conditions of great job-site dispersion may be impossible. Such cards are also difficult to adjust for the compassing of emergency situations. Nevertheless, an admitting office must be responsible for such records in whatever form is most practical, not only for the hospital but also for the timekeeping department.

Closest cooperation between the supervisory and insurance personnel representing the insurance carrier is essential. This may well include providing desk space in the admitting office for such insurance personnel. One or more persons must control this department, making individual records of all potentially compensable conditions which pass through the admitting office. Any criticism of the records from the insurance personnel must be final. All first aid men, nurses, and physicians have in common a regrettable tendency to omit full records capable of legal analysis at a later date. This tendency may be best overcome if mechanical recording devices are provided at the proper places so that full information may be dictated for a later transcription. It is definitely better that the record of injury be transcribed both by insurance representatives and the medical personnel as well. Comparison of these records will frequently elicit the truth of a situation when either alone is inadequate. Close cooperation interdepartmentally between the medical officer, safety engineer, insurance representative, and the personnel director is the greatest single organizational factor in the successful operation of this hospital.

Problems of disposition far surpass in frequency and number any medical problems. What to do with this man? Shall we return him to duty? Shall we declare him possessed of an aggravated disability? If so, what is the degree of aggravation? Is his disability solely the result of line of duty action? Is he a malingerer? Is he constitutionally, for many minor reasons, unsatisfactory for continued duty at the job-site, or should he be returned home as soon as possible with every benefit for indefinite, uncertain minor conditions found in the aggregate to be disabling? When and under what conditions will his home care become the continuous responsibility of the insurance carrier? All these problems, which are legion, are individual ones. Each one must be answered according to a company policy S.O.P. laid down in writing for the benefit of all concerned. To adapt an individual problem to this S.O.P. requires a meeting of the medical officer with the heads of the three other departments mentioned, possibly in the presence of the employee, and possibly after consultation with superiors of the employee. It has been our observation that the one great pitfall in such dispositions arises from an attempt to expedite final disposition with overhaste. A pause of three to five days in the hospital for observation, although at the start seemingly useless, frequently solves the whole matter to the best interests of both the employee and the company. Such an observation period may fully return an employee to duty, or it may bring out the fact that a bad situation at home is the whole trouble. It goes without saying that during this ob-

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servation period restricted laboratory, x-ray and physical studies are carried on.

Treatment rooms in this hospital must be three in number; one for physiotherapy, emphasizing the relief of minor sprains by diathermy, contrast baths, etc.; another for the handling of routine sick call conditions, and a third which may be ideally adapted to recovery purposes.

The operating room must be fully equipped, especially regarding plasma, resuscitation equipment, oxygen, and all other means for handling acute conditions of shock. A direct entrance to the operating room without bringing injured personnel through admitting room or ward is most important. Likewise, from the same door the x-ray must be freely available to a patient on a stretcher, and space must be so arranged that several injured persons, if need be, may be cared for immediately inside the entrance either on beds, stretchers, tables, or the floor. Just outside this entrance a rack of criss-cross rubber strips with a top that may be lifted off as a stretcher must be provided. An injured patient with coral dust and dirt ground into his tissues may be laid upon this rubberstrip grid, and a warm shower on a flexible hose above him will enable the first aid men properly to cleanse his wounds while the clothing is being cut away and other control measures instituted. Once the patient is clean he can be maintained prone, moved inside to an emergency room, the x-ray room, or the surgery. If he is brought in dirty it may be hard, indeed, effectively to cleanse him within the building. In short, the end of the building to be used for emergency work should remain secure at all times, ready to accept and control emergencies envisioned, even if only as remote possibilities, on the job-site. The security of this area must never be violated, just as the telephone watch instituted in the admitting office must be 24 hours on the alert.

The diagnostic facilities of our small hospital are necessarily restricted. The laboratory function is 90% involved in urinalysis, occasional bacteriology, and especially parasitology. Special training in intestinal tract parasitology is highly important if the job-site is in tropical climates. Possibly the most important single function of the laboratory in addition to routine hematology and urinalysis on all hospital admissions is the maintenance of a living blood bank always alerted and ready for use after a patient has been maintained by the immediate employment of plasma, fluids, etc. These functions cannot be obtained without the assignment of special personnel to laboratory work.

Job-site x-ray equipment should be handled by trained personnel, and should particularly provide unquestionable roentgen study of skull, neck and spine. Decisions to evacuate patients for specialists' care may frequently be reached only through the agency of good x-ray work.

On account of isolation, the warehouse department is most important, and one individual must be assigned to its care. Supplies ahead of time to provide for at least six months are minimal. Bulk storage in any suitably secure building at the job-site is satisfactory, but expenditure issue rooms must be available within the hospital building.

SUMMARY: It is emphasized that the pre-employment medical study from every standpoint will solve and eliminate a high percentage of the hospital problems. A job-site industrial hospital has special needs and special functions, and they must be provided for in every instance for the welfare of the company and the employee.

The importance of a written standard of operative procedure for all departments cannot be over-emphasized. Such standard procedure manuals for every division from the pre-employment medical examiner through the admitting office and minor treatment room to the emergency entrance and the surgery will make it possible for the continually and unavoidably rotating personnel successfully to operate our small institution.

Agreement on these standard procedures by all departments involved as well as the management, and then a free hand to the medical officer in charge will bring great dividends in money, morale, and satisfaction to the company and the man.

(Naval Supply Center, Oakland, California.)

Fatigue

FATIGUE in office work is ordinarily assumed to be mental fatigue. Mental fatigue, however, is a very elusive thing. It has never been measured and its very existence is denied by many psychologists who say that the brain is tireless and is working whether one is awake or asleep. Fatigue of clerks is usually physical, due to bad ventilation, poor lighting, bad posture, poor chairs and other equipment, and to some slight extent to the physical effort in the work.

—W. H. LEFFINGWELL, in *Office Executive*, June, 1952.

XUM

Occupational Deafness

JOSEPH SATALOFF, M.D.
Philadelphia

THE TERM "occupational deafness" is somewhat misleading. It implies the presence of obvious difficulty in hearing speech. Actually, the difficulty lies not so much in hearing speech as in understanding it. The trouble frequently results from the loss in hearing for high frequencies, which is the characteristic finding in cases of occupational deafness. Since many of the consonants which give meaning to words occur in the high frequencies, it is natural that

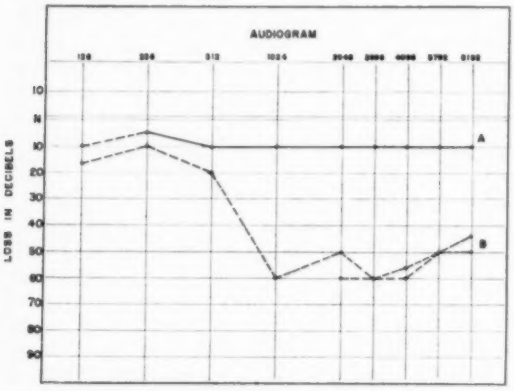

Fig. 1.

people who do not hear these frequencies or hear them feebly should be confused in understanding certain speech sounds, especially when they are poorly enunciated. Hence, unless one specifically looks for this lack of consonant discrimination, the presence of hearing loss is likely to be overlooked since intense efforts are generally made by the employee to compensate for his handicap.

Occupational deafness is a type of hearing loss resulting from exposure to loud sound produced in industry. Varying degrees and types of hearing loss may often be severe enough to interfere with communication during work and produce serious social and psychological repercussions. Reports in the literature reveal that the following occupations produce noise sufficient to affect the hearing of high frequencies: boilermaking, weaving, aircraft maintenance, blacksmithing, chipping, riveting, blasting, machine manufacturing, gunfiring, metal working, and many others utilizing large presses, high pressure steam, large wood saws, and heavy hammering, such as in steel and iron works. An excellent example of occupational deafness is described by McCoy[1] in his studies on chippers. Fig. 1, curve A, shows the hearing acuity of a new group of men prior to exposure to the noise produced by chipping. After seven hours of chipping in an over-all noise level measured at 120 to 135 decibels, the hearing acuity is shown in curve B. The hearing for high tones has dropped from an average of 10 to an average of 60 decibels. This is a severe loss. After a month of chipping the hearing loss in many of these men became permanent.

Another example of occupational deafness is shown in Fig. 2. Curve A shows the normal hearing acuity of a 30 year old woman prior to exposure to a jet engine for about 30 minutes. Curve B shows the marked loss in hearing acuity following the exposure. There is a loss in hearing acuity of about 30 decibels in the right ear and 20 decibels in the left ear. In this case, the employee was wearing ear protectors. They failed to give adequate protection. Still another example is seen in Fig. 3, in which an employee was exposed to a reciprocating engine for about 30 minutes. Curve A shows the

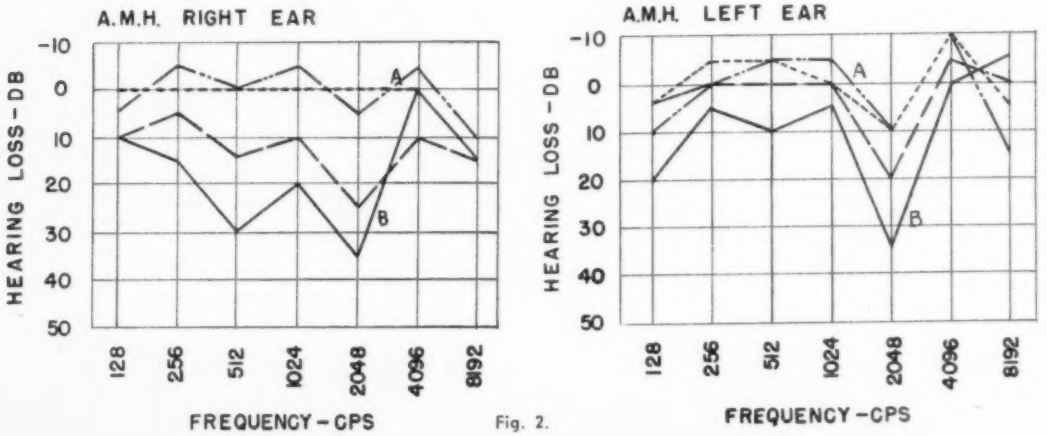

Fig. 2.

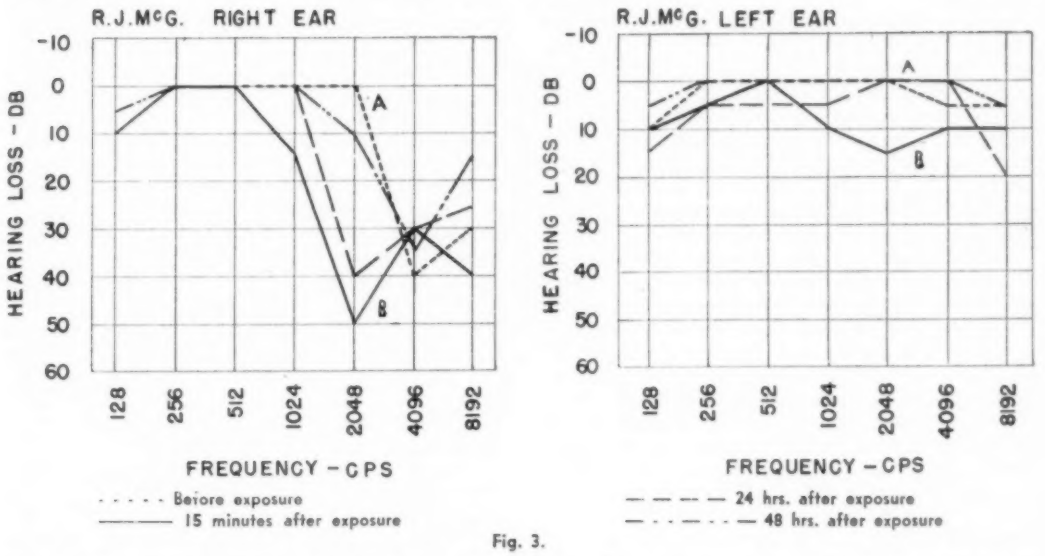

Fig. 3.

hearing prior to exposure, and Curve B the subsequent loss in hearing of about 50 decibels in the right ear. This employee also wore another type of ear protector, which was obviously ineffective. These cases demonstrate the importance of proper hearing protection.

There is still lack of scientific agreement as to the type and intensity of noise which may be considered hazardous to hearing.[2] Various investigators have cited such critical sound levels as 80,[3] 90,[4,5] or 100[6] decibels above which hearing damage is likely to result. Careful scrutiny of many such reports stating critical noise levels below 100 decibels reveals that either the conclusions were not warranted or control studies were inadequate. Most of the reports failed to include spectral analysis of the noise. It is inadvisable to estimate the deafening effect of noise solely on the basis of sound-pressure determinations. As yet, no satisfactory correlation of intensity and frequency has been established as the borderline for safety. The presence of loud noise in plants and factories should be carefully surveyed to determine the potential danger to the hearing of exposed personnel.*

Studies** reveal that a large percentage of men now being hired by industry already demonstrate considerable degrees of hearing loss in the high frequencies. Much of this loss has probably resulted from exposure to gunfire or from natural causes. Unless the employing industry does accurate pre-employment hearing testing, it will not be possible to establish the presence of, and record, this loss. Without such reports, the possible consequence can be predicted that employees, particularly during times of depression, may claim compensation for hearing losses due to industrial trauma. Both industry and labor should make efforts to prevent such a situation from developing.

The degree, type and permanence of occupational deafness depend primarily upon individual susceptibility and the intensity and character of the noise. It is generally recognized that intense noises in which the higher frequencies predominate are more dangerous to hearing. Recent evidence suggests, however, that low frequencies may also produce considerable hearing damage when they are of high intensity.

Industry in which noise is a hazard to hearing must establish comprehensive hearing testing programs to safeguard its employees. These programs should be under the supervision of the industrial physician, in close cooperation with the safety engineer. The first step should be an acoustical survey of all intense noise in the work places. This can best be done in consultation with an acoustical engineer, an experienced audiologist, or with men in allied fields who are familiar with hearing and its problems. The object of the survey should be to establish certain noises as innocuous, other types as potentially hazardous pending further study, and still other types as definitely harmful to hearing. This determination can often be made on the basis of intensity levels, spectral analysis, previous experience, and hearing testing.

The next step is to establish an accurate pre-employment hearing testing program. This is essential only for employees who are to be exposed to hazardous or potentially hazardous industrial noise. In order for a hearing test to be legally valid, the audiograms must be performed by a well-trained person using a calibrated audiometer in a room of measured ambient noise level, employing excellent audiometric technique.

*Studies to be completed and published soon, made by the author at two large industrial plants** during the past four years strongly indicate that some noise levels now considered hazardous to hearing are not hazardous even after prolonged exposure.

**_____ Electric Corporation, in conjunction with C. D. Stull, M.D., U.S. Naval Base, NAES, AMEL.

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It is also wise to have the ears of the employees examined by a physician prior to the hearing test. One audiogram is insufficient to establish an accurate threshold of hearing. It is essential that at least two audiograms be done some time apart, and that they be consistent with each other. If the employee is to be exposed to very intense noise, his hearing acuity should be determined at regular intervals, and steps taken to prevent any permanent hearing loss.

Safety measures, such as noise reduction and wearing the proper type of hearing protectors, should be enforced by safety engineers where studies prove these are necessary. Audiograms should also be performed at least twice a year on all personnel already employed in areas of intense industrial noise. Many will be found to have normal hearing, and the thresholds will be as significant as in a pre-employment study. Those with some hearing loss can be further analyzed for etiology and severity.

Summary

OCCUPATIONAL deafness is assuming important medicolegal aspects. Hearing loss may result from exposure to many forms of occupational noise. The characteristic finding in occupational deafness is loss of hearing for high frequencies, with resulting difficulty in discriminating speech. Several examples of occupational hearing impairment are presented. Industries in which loud noises are produced should establish comprehensive hearing programs. The programs should consist of acoustical evaluation of the noise for intensity and frequency characteristics, pre-employment hearing studies, and periodic audiograms on all employees exposed to hazardous or potentially hazardous sound. The program should be administered by the industrial physician and the safety engineer. The importance of accurate hearing testing is emphasized.

(1721 Pine Street.)

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Dental Services in Industry

THE AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS reports a recent survey on dental services in industry, and questionnaires were sent to 628 large companies. The replies disclosed the following: (1) Only 7.5% (or, of the companies replying, 13%) report the maintenance of any dental service whatever. No company with fewer than 800 employees maintains one. (2) Services when established have usually been available to all employees, although certain large companies impose geographical limits. Many companies make use of a mutual benefit association in the administration of their services. (3) A majority of the services reported are optional as far as the employee is concerned. These optional services in general appear to serve a smaller percentage of the company staff, the larger the range of dental treatment undertaken. Compulsory services are almost invariably limited to examination and prophylaxis. (4) The optional dental services each year care for an average of 35% of the number of employees to whom the services are available. (5) The professional standards of dental services are found to be under the control of dentists in the majority of companies, whereas the executive control is more often vested in some other officer or a combination of officers, usually dentist and physician. (6) Services vary in extent from mere exploratory examination to almost the entire range of dental treatment, although the services of limited extent are in the great majority. (7) Most of the dental services involve the maintenance of clinics on the company premises. A few services involve work on the premises and/or in private dental offices, and an even smaller number made use of private offices alone. (8) Free choice of dental practitioner is the general rule, though the exercise of complete freedom usually involves loss of financial aid from the company. Really limited choice is confined to certain compulsory services of small scope. (9) The majority of the dental services are financed entirely by the employer though a certain number involve a sharing of expense, often arranged through a mutual benefit association. (10) The majority of companies allow their employees to obtain during working hours the types of dental treatment covered by their services. (11) Occupational hazards are found to play a small role in the establishing of dental services. Attendance, efficiency and good will are the major reasons listed, with a slightly greater emphasis upon attendance and efficiency among those companies having compulsory dental service, and upon the good will in those companies having optional service. (12) The findings suggest the formulation of a set of Minimum Standards for Dental Service in Industry.

XUM

The Allergic Employee

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BECAUSE of the relatively large number of employees coming to the Medical Dispensary with complaints which seemed to be on an allergic basis, it was felt that a pilot testing service would be worth-while. The employees are mostly office workers, with a few from the commissary and building departments. Some had had previous allergy treatment elsewhere, both successful and unsuccessful. Almost all had tried one or more of the antihistaminic drugs.

The accurate diagnosis of these conditions requires specialized medical knowledge (or training) and a large assortment of expensive testing solutions. Proper treatment can be obtained from a physician or a clinic; the former may be costly because of the large number of treatments necessary, and the latter may be inconvenient or time consuming.

This pilot testing service was begun in June, 1948, using only the antigens which are considered the common offenders in allergic disease. Treatments are carried out in cooperation with the family physician. A few have continued treatment with their doctors, using our schedules and extracts after leaving the company.

Procedure

A COMPLETE history is taken in each case, emphasizing the usual allergic complaints referable to respiratory, neurological and gastrointestinal systems and the skin. Inquiry is directed toward possible exposure to irritants at work or at home and familial incidence.

Routine physical examination is complete and includes chest fluoroscopy; an ear, nose and throat specialist's opinion; roentgenograms of the paranasal sinuses; laboratory tests as indicated.

Specific intradermal skin testing is performed on three different days. The wheals and flares resulting are measured in centimeters. The following extracts are used at the first session:

1. Plantain
2. Ragweed
3. Trees
4. Timothy
5. House dust
6. Orris
7. Textiles (kapok, cotton, silk, wool)
8. Feathers
9. Molds (a mixture of six)
10. Danders (cat, dog, horse)
11. Tobacco

At the second session food extracts are used in testing:

1. Chocolate
2. Carrot
3. Orange
4. Wheat
5. Tomato
6. Milk
7. Rice
8. Fish (a mixture of six)
9. Nuts (peanut, walnut, cocoanut)
10. Meats (pork, beef, lamb, chicken)
11. Egg white
12. Banana
13. Grapefruit
14. Coffee

At the third session tests depend on the specific complaints and results of the previous tests. If necessary the strength of the extracts is changed to find the minimal amount of the reacting extract necessary to obtain a positive reaction. Individual extracts are used on those reacting to the mixtures.

Patch testing is performed on cases of contact dermatitis if cosmetics, office or household articles are suspected. The employee brings in samples of the suspected offenders, which are applied with small gauze-adhesive dressings.

Advice is directed towards (1) immediate palliation with the use of an antihistaminic drug, (2) removal or avoidance of offending allergens, wherever possible, and (3) specific, perennial desensitization in graded (A, B, C, D) schedules depending on individual sensitivity. (A) indicates very sensitive; (B) sensitive; (C) moderate reactivity; (D) the least sensitive. Some react so strongly they are started on 1/10 A schedules. Commercial combined catarrhal vaccine is suggested in sensitivity to bacterial infection.

Results

FROM June, 1948, to August, 1950, 654 employees were examined and skin tested. Of these 344 remained under active desensitization through the fall of 1950. The other 310 had resigned or discontinued treatment (224), or had not received any definite treatment (86). Of the 224 who discontinued, 87 had dropped out before August 1, 1949, and these were mostly young (80% under 35 years of age) and female (90%).

In October, 1950, each employee undergoing injections received a questionnaire asking him to record his opinion about the results of each individual antigen in his treatment. If he had noted improvement he indicated whether it was excellent, good or fair. Failures reported a poor result, no change, or questionable result.

Some individuals had consistent results to all antigens, and some had varying experiences. The results of 334 individuals receiving one or more injections and reporting in October, 1950, are tabulated in Table I. Comparison of these results and those of 1949 are shown in Table II.

Comment

TO ANALYZE failures and to determine whether a perennial schedule is advisable, ragweed was chosen as a sample allergen. Of the 178 employees reporting 17 classified themselves as having had "poor" (6), "no change" (8), or "questionable" (3) results. By their reaction to skin testing it was noted that more of these

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TABLE I.
RESULTS REPORTED IN OCTOBER, 1950, BY 334 INDIVIDUALS

Antigen	Individuals	Successes					Failures				
		Excellent	Good	Fair	Total	& Percent	Poor	No Change	Questionable	Total	& Percent
Trees	24	8	12	3	23	96			1	1	4
Plantain	14	6	7		13	93	1			1	7
Timothy	73	20	34	10	64	88	1	5	3	9	12
Ragweed	178	55	82	24	161	90	6	8	3	17	10
Molds (6)	56	14	23	9	46	82	3	5	2	10	18
Dust	256	57	111	45	213	83	7	25	11	43	17
Cat	3		3		3	100					
Dog	11	4	5		9	82		2		2	18
Feathers	5	2	1		3	60		2		2	40
Orris	3	2	1		3	100					
Cotton	1		1		1	100					
Tobacco	1							1		1	100
Catarrhal Vaccine	61	20	22	8	50	81	3	5	3	11	18
Total injections	686										

TABLE II.
COMPARISON OF 1949 AND 1950 REPORTS

Antigens	Individuals		Percentage Improvement		Change in Important Allergens (in %)
	1949	1950	1949	1950	
Trees	16	24	100	96	—4
Plantain	16	14	68	93	25
Timothy	49	73	83	88	5
Ragweed	124	178	84	90	6
Molds	29	56	67	82	15
Dust	168	257	76	83	7
Cat	6	3	83	100	
Dog	5	11	80	82	
Feathers	7	5	86	60	
Orris	8	3	100	100	
Cotton	—	1	—	100	
Tobacco	1	1	100	0	
Catarrhal Vaccine	23	62	62	81	19

TABLE III.
COMPARISON OF RAGWEED RESULTS IN 1949 AND 1950

No change	Remained excellent	11	
	Remained good	22	
	Remained fair	4	
	Remained poor	1	
		—	38
Improved	From good to excellent	14	
	Fair fair to excellent	7	
	From fair to good	15	
	From poor to good	2	
	From poor to fair	2	
	From no change to good	2	
	From no change to poor	1	
		—	43
Less successful	From excellent to good	4	
	From good to fair	1	
	From excellent to poor (only one real failure)	1	
			—
	Total		87

TABLE IV.
COMPARISON OF RAGWEED INJECTION PERIODS

Length of Time Injections Received	Individuals		
	Total Number	Number Improved	Percent Improved
Second season	87	84	96
First (current) season	91	77	85

Average improvement for 1950 is 90%.

persons were "very sensitive" (11) and, therefore, on low dosage injection schedules, (three were on a 1/10 A schedule, five on A, and three on B schedules). The remaining six were divided between C and D schedules. Of these 17 reporting failure, 10 had had their symptoms eight years or longer, indicating that the condition was firmly established. Of these same 17 employees, seven had been on their schedule for four months or less and were not as yet on maximum dosage. Only six had had injections for a year or over. These failures occurred mostly, therefore, in persons with long established disease, in those who were extremely sensitive to the antigen, or in those who had only started their desensitization program.

On the other hand a prolonged perennial program results in improvement of the clinical subjective result. Of the 178 in the 1950 ragweed sensitive group 87 were carried over from the 1949 season and two from 1948. Of the 87 continuing injections 84 reported favorable results, or a 96% improvement rate. This 96% improvement rate for the second year's group exceeds the 85% improvement rate for the group treated only for the current 1950 season. It may be concluded that a perennial schedule faithfully adhered to over a long period of time results in greater improvement during the pollen season.

Whereas ragweed extract is used in the specific seasonal rhinitis cases, dust extract has more varied implications. In many seeking an allergic work-up, skin complaints were the presenting symptoms, but on ear, nose and throat examinations many of these individuals were found to have pale, boggy nasal mucous membranes and some mild symptoms of perennial rhinorrhea. These were also carried as rhinitis cases. On the other hand, 13 purely dermatological cases received dust desensitization, and of these seven reported good and four fair results; this is a total of 11, or 85%, improvement. Of these 13 patients, 11 received only dust and two also a mixed mold extract. With combined antigens both reported good results.

Summary

THE experience of a pilot study in allergy in industry has been outlined. A skeleton testing kit has been used, and results of desensitization schedules are tabulated. It may be concluded that 80% or more of allergic individuals receiving specific desensitization injections regularly can expect improvement in their seasonal or perennial complaints. This improvement continues if the schedules are faithfully followed for more than one season.

[Acknowledgment is made to DR. ANTHONY CONTI, who made all ear, nose and throat examinations.]

Optional Retirement Plans

— Their Implications for the Industrial Physician —

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IT IS LIKELY that this Congress will develop every possible reason for the continuation of employment beyond the present arbitrarily established retirement age of 65 years. It is just as likely that we will hear an exhaustive development of all of the social and economic benefits likely to accrue from such a change. For the sake of balance, rather than because of the author's convictions in the matter, the present paper will deliberately strike a sour note. It will review, superficially to be sure, the good and compelling reasons for arbitrary retirement as these are traditionally expressed; and will point out certain difficulties to be expected, with respect to one technical field at least, in the overall administration of a policy which would permit variations in the retirement age.

It is within the memory of most of those present that a worker was "let out," as the saying was, when his level of productivity dropped or when a more highly productive rival for his job appeared on the scene. The development of retirement and pension plans, gradual and slow during the first decades of the century and precipitous during the fifth, carried with them the implied corollary of job security to the age of 65. The fixing of a date so near the end of the life span was in itself a major social achievement which has not been fully appreciated. A good argument can be advanced for permitting the industrial economy, to say nothing of the human beings involved, to develop some experience with this policy before it is cast aside for another. The provision of funds for the support of those in retirement requires the setting aside of precise sums of money which we are told can be determined only on the basis of a fixed retirement age. The employee who begins to slip in his productivity in his early sixties is apt to be carried along by his employer if the amount of such a liability is definitely known as is the case when retirement is compulsory at age 65. Young men of great ability usually evaluate a job offer on the basis of future opportunity as well as present remuneration. A part of this evaluation is a consideration of whether a company has a retirement schedule which provides room for the advancement of younger men. Industrial organizations unavoidably accumulate deadwood at all echelons of company structure. The accomplished drone is usually difficult to identify, or is a likeable fellow who is "covered" by his associates. In either case, he is probably a person whose health has always been adequately considered and who may be expected to pass health examinations for extended employment with colors flying. Finally, there are the points that retirement which is arbitrary and certain at age 65 can be planned for, that it does not publicly point out the retiree as one who is physiologically as well as chronologically old, and that proper preparation for retirement adds richness to living in the years preceding retirement.

ONE of the plants with which the author has an association recently agreed by contract with its union to permit variation in the retirement age. The contract language which covers this point is as follows: "Postponed retirement after age 65 shall be subject to the employee's continuing to perform assigned or available work efficiently and safely." The two adverbs at the end of the sentence are recognized as potential trouble makers which will require careful definition with the passage of time. It is expected that the first of the words, "efficiently," will shortly imply relative freedom from sick absenteeism, predictability of attendance and performance throughout the workday once begun, and reasonable certainty of completion of a work-year. The word, "safely," will, of course, mean freedom from accident proneness which has its basis in the physical changes attributable to increasing age. These are all characteristics based upon health, and hence within the scope of industrial medicine. Now, it would be expecting too much of human nature to hope that there will always be ready agreement among the concerned parties at this plant as to who will be able to work efficiently and safely beyond the age of 65 years. Some of the predicted disagreements are certain to be related to the health aspects of efficiency and safety, and thus to involve the plant physician.

The limitations of industrial physicians' contributions to the best solutions of retirement problems are the limitations of clinical medicine. The physician has been trained to discover abnormalities. The central question in a retirement problem has primarily to do with capacity to perform. The making of diagnoses and the measurement of performance capacity are skills in two different fields. The use of findings in the first as bases of judgments in the second

Presented at the Session on Industrial Hygiene and Ageing, Second International Gerontological Congress, St. Louis, September 12, 1951; one of a series of papers in a Panel Discussion on "Compulsory Retirement at 65."

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is more than a little hazardous. For the time being it is necessary to recognize that measurements of performance capacity are best made with technics and skills possessed by professionals other than clinicians. In some cases performance is not satisfactorily measured by any objective means developed to date, and reliance is best placed upon the opinions of those associated at work with the employee under consideration. Performance measurement methods suited to the use of industrial physicians in problems of this type must be developed by researchers in physiology, psychology, and perhaps psychiatry. Despite these limitations, the plant physician is able at the present time to make contributions to the solution of problem cases through the use of the resources within a good industrial medical program.

IT IS the practice in an increasing number of industries to provide periodic health examinations of employees. In the chemical and the atomic energy industries this service is provided annually to all employees whose jobs are remotely associated with an opportunity for occupational exposure to materials and agents known to be or suspected of being harmful to man. In these as well as in other industries it is increasingly the practice to provide older employees with health examinations irrespective of possible exposures to occupational health hazards but rather as a purposeful part of constructive health programs. The examinations are followed by discussions which may result in changes of work, rest, recreation or diet with the hope of ameliorating or eliminating the changes that foreshadow chronic disease; or the employee may be referred to his personal physician for treatment of a disease process already established. The record of these events and experiences provides the industrial physician with a unique tool for an over-all appraisal of the health status of an employee. The full medical record contains, besides, notes of ordinary illnesses for which the employee reported to the plant medical department. Some of these were related to sickness absences, some required minor medical treatment at the industrial dispensary, and some require discussions and health counseling. The significant information concerning serious illnesses is summarized in reports received from the community's physicians. The capacity with which the employee handled these situations and the permanent marks they have left upon him are portrayed in the accumulated industrial health record. This is data which provide an invaluable background for gauging the importance of present medical findings as they bear upon continued employment when the sixty-fifth birthday is reached. They enable the industrial physician who has a good knowledge of the demands of plant jobs to make reasonably satisfactory predictions as to sickness absenteeism, the capacity to finish each day's work, and the likelihood of completing another year of work. Limited though such an expression is in terms of the total opinion required, it is still substantial and useful.

The point of weakness in all this is that the prognostication must, in the end, be an opinion. If there is a prior agreement by all concerned parties that the plant physician's opinion will be accepted, all is well. Without such prior agreement, the opinion should be withheld. No provision is specifically made for such a situation in the union contract referred to earlier in this paper. This same contract does contain a provision for the settling of disagreements as to the existence of permanent disability under the company's pension plan, as follows: "The employee shall be examined by a physician appointed for the purpose by the company and by a physician appointed for the purpose by the union. (If these disagree, the) question shall be submitted to a third physician selected by two such physicians. The medical opinion of the third physician .... shall decide the question." Here there is evidence of a clear insight into the vulnerability under hostile attack of any medical opinion, and recognition of the principle of prior agreement to the acceptance of such opinion. It would seem that the same or a closely similar administrative mechanism could be established for the resolution of retirement disagreements as well.

SUMMARY: Optional retirement plans usually carry the stipulation that the employee should be able to perform satisfactorily his regular job or one which is available to him. The industrial physician may be depended upon to have competence in the early recognition of physical and mental abnormalities, but this is quite a different matter from competence in the measurement of capacities to perform. The latter must, for the most part, await the development of knowledge through research by physiologists and psychologists. Until such knowledge is developed, the industrial physician can do no better than express opinions based upon the findings of clinical abnormalities, an acquaintance with the work situation, and clinical judgment. He will do well to dodge assignments in this area unless there is prior agreement by the concerned parties to accept his opinions without controversy.

XUM

Blood Tests Without Fainting

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IT HAS been my observation in the Army and at various clinics that fainting during the withdrawal of blood occurs too frequently. Fainting is caused by trauma, physical or psychic. Following is the procedure which was followed in 9,000 consecutive blood tests without a single case of fainting. The employees on whom the blood tests were made, represent a fair cross section of our industrial population—including whites and colored, males and females.

The procedure is outlined:

1. A blood test should be done as a part of the general examination, preferably at the midpoint of the physical. This has three advantages: (a) People ordinarily expect the blood test to be done at the beginning or the end of the examination, therefore, by doing it at the middle, it is done when least expected. (b) The physician can study the veins while doing the preliminary part of the examination, especially while taking the blood pressure. (c) The puncture wound can be observed for seepage during the remainder of the examination.

2. At no time must "blood" be mentioned, because some people are adversely affected by the mere saying of the word.

3. The person examined must not see the blood or needle and syringe at any time. This can be prevented by: (a) Keeping the sterile needles and syringes in one of the drawers of the physician's desk. (b) Putting the blood-collecting tubes in an opaque container or paper-lined glass tumbler. (c) Insisting that the employee look away when the blood is being drawn.

4. Do not saturate the cotton with the antiseptic used to cleanse the skin, because any fluid trickling on the forearm will be imagined to be blood.

5. Apply a soft rubber tourniquet gently. Do not pinch the skin. Loop the tourniquet so that a slight pull releases it.

6. If the vein is not easily visible, take sufficient time to palpate for it. The vein is there. Don't probe for it, feel for it.

7. Use the direct approach for the vein. It is unnecessary to go more than a quarter of an inch from the point at which it is expected to enter the vein. Entering the skin an inch or more from the vein and snaking a way to the vein may be causing a lot of unnecessary trauma for a simple procedure. The latter method may have some merits if the needle is to be held in the vein for a long time, as required in some therapeutic procedures.

8. A 21-gauge 1¼-inch Huber-point needle has been found the most satisfactory for the following reasons: (a) The longer length allows for an approach that is more parallel to the lumen of the vein. (b) The Huber point minimizes the probability of piercing the deep wall of the vein. (c) A 21-gauge allows the blood to flow freely, thereby cutting the time the needle is in the vein.

9. Use the person's arm that is nearest whenever possible. The arm should be fully extended, and the elbow should rest in the operator's left hand. The operator's left thumb is placed firmly over the vein that has been selected, and about one inch distal to the point of entry of the needle. As the needle—bevel up—is pushed through the skin, the pressure in the left thumb is increased, and the needle enters the vein with the least amount of discomfort. As the blood is being drawn, the point of the needle should be pressed against the posterior wall of the vein to avoid any vibration of the vein against the opening of the needle. Before the needle is withdrawn, a pledget of cotton is placed over the needle at the point of entry into the skin, and while applying gentle pressure the needle is withdrawn. Without releasing the pressure on the cotton, the employee is instructed to bend the elbow, and it should be held in that position for three minutes. During this waiting period, the operator may rinse the syringe and needle, label the tube, and make some notations on the chart. A small band-aid is placed over the puncture wound and the examination is continued.

10. The motto, "If at first you don't succeed, try, try again," has no place in blood taking. The maximum number of attempts should never exceed two; one in each arm.

BY FOLLOWING these rules of procedure, the author has done 9,000 consecutive venous blood withdrawals, without having a single case of fainting. Though the complication is not a serious one, its occurrence creates a bad first impression on the employee, and further relations between him or her and the physician suffer accordingly.

Many people judge the ability of a surgeon by the appearance of an abdominal scar; by the same psychology, a physician's ability is often judged by the ease with which he takes a blood test.

(29-10 Thomson Avenue.)

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Servants of the year: Dr. Frank Princi, left, and Dr. Robert Kehoe, right.

Dr. Christopher Leggo delivers the Ramazzini Oration.

The Dean of all industrial medicine, Dr. Robert T. Legge, here shown with Mrs. Legge.

The Ramazzinians in 1952

THE RAMAZZINI SOCIETY in its seventh conclave, but in its twelfth year of life, assembled at the Moraine-on-the-Lake Hotel in Highland Park, Illinois, on the shore of Lake Michigan on June 6, 7 and 8. This medical assemblage was one of some 125 meetings ancillary to the American Medical Association's sessions beginning June 9 in Chicago. The Servants in charge of the 1952 RAMAZZINIAN activities were DRS. ROBERT A. KEHOE and FRANK PRINCI, both of Cincinnati. Their successors for 1953 are DRS. JAMES H. STERNER and LEMUEL McGEE, of, respectively, Rochester, New York, and Wilmington, Delaware. The prospective site for 1953 is Gatlinburg, Tennessee.

The Ramazzinians, well dedicated during the annual session to hilarious and nonponderous matters, are, no less, committed to sober reflection on a single medical presentation—the RAMAZZINI ORATION. The orator for the year was DR. CHRISTOPHER LEGGO, of California. It was one thesis of DR. LEGGO's lecture that, despite the earnest effort of scores of enterprises directed to the better adjustment of mankind to the world in which they find themselves, including the worker in relation to his work, all have failed. Almost on a trial-and-error basis it was proposed in the midst of failure that a new and somewhat revolutionary approach be appraised—the socio-anthropological. Exactly what the proposal embraces may be found in the Oration itself (page 311 herein). From the inception of the RAMAZZINI SOCIETY, all the annual Orations have been published in this Journal. The greater number have been directed to the historical topics and personages. The present one, unlikely to be cataloged as historic, in a measure is still historic—the history of the human race's inability contentedly to adjust itself to the world on which it was born.

Hotel Moraine-on-the-Lake, Highland Park, Illinois, site of the 1952 Ramazzini Rendezvous.

Overseas visitors to the Ramazzini meeting: Dr. Sven Forssman of Sweden (left) and Dr. R. E. W. Fisher of England, with their host, Dr. Carl M. Peterson, between.

Some of the Ramazzinians in 1952: standing left to right, R. A. Kehoe, R. E. W. Fisher, A. J. Lanza, W. J. McConnell, L. E. Hamlin, C. Leggo, F. Princi, J. F. McCahan, L. McGee; seated left to right, D. A. Irwin, A. G. Kammer, Sven Forssman, L. Greenburg, R. T. Johnstone, A. J. Vorwald, W. P. Yant, O. A. Sander, C. P. McCord, J. M. Carlisle, J. H. Sterner.

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Images of Ramazzini

— Engraving, Painting, Statuette —

THE BEST KNOWN and most often copied likeness of Bernardino Ramazzini (1633-1714) is the engraving in his Opera Omnia. This appears in Wilmer Cave Wright's translation of Ramazzini's "De Morbis Artificum," which, in part, accounts for the familiarity of this portrait. It is shown here as Fig. 1.

Recently, a mild search was made for other Ramazzini memorabilia. Certainly without exhausting possibilities, a number were located and seven are now mentioned. Three of these were furnished by Dr. Robert T. Legge, our own occupational disease antiquarian. Some others directly were viewed in Italy, but there was encountered much confusion as to certain simulacra being the originals, who were the painters or sculptors, the locations of the originals, the dates of the creation of the images. Translations of inscriptions and interpretations of various symbols were provided by Dr. Bruno Meinecke, Professor of Latin, in collaboration with Dr. Vincent Scanio, Professor of Italian, both of the University of Michigan, a helpful favor highly appreciated.

Fig. 2 bears a striking resemblance to Fig. 1. It is possible, but not precisely known, that the Fig. 1 likeness in the original may represent a repainting of Fig. 2 which, as here shown, includes additions not present in the original. The "C.V.C." connotes "On behalf of a famous man." This is in keeping with the custom of the period and is the equivalent of the present "V.I.P."—"Very Important Person." This painting, as indicated in the inscription, was provided by an admirer, Polidorus Anchisius. Ramazzini's name at the top probably was not included in the original and represents an addition. The name 'Licorus Langianus' was Ramazzini's assumed appellation as a member of the Arcadian Society. Apparently this Arcadian Society was organized in 1690, just about the period of Ramazzini's enlarging fame. Its purpose was to revive the pastoral simplicity of poetry (Ramazzini being a creditable poet) by study and creative effort. The society was founded by Crescimbeni, with 14 other notables. Soon thereafter branch chapters were established in the principal cities of Italy. All members attended meetings in mask and dressed like Arcadian shepherds. This resulted from the fact that the membership embraced all walks of life, kings, princes, high ranking political and church officials. Thus, it would have been bad taste not to hide identity. Members of royalty and nobility likewise attended incognito, functioning under assumed names and so providing for democracy within this learned society. By 1700 there were 600 members. Ramazzini may have been a charter member, for the remaining portion of the

Fig. 1.

BERNARDINVS RAMAZZINI
C. V. C.
A LICORO · LANGIANO · P · A.
PHILOSOPHO
POLIDORVS · ANCHISIVS · P · A.
XII. VR. COLL. ARC. CL. VRO. P.
OL. DCXXV. AN. IV. AB. A. I. OL. IX. AN. II.

Fig. 2.

BERNARDINO RAMAZZINI ARCHIATRO DI FRANCESCO II D'ESTE
CON SOLENNE ORAZIONE IL VI DICEMBRE MDCLXXXII INAVGVRAVA
QVESTA VNIVERSITÀ DAL DVCA PER SVO CONSIGLIO RICOSTITVITA
QVI PER XVIII ANNI PRIMO PROFESSORE DI MEDICINA CON L'ECCEL-
LENZA DE L'INSEGNAMENTO - DOVE VOLLE COLLEGA IL TORTI - CON
LE OPERE IMMORTALI SV LE MALATTIE EPIDEMICHE - SV LE SCATVRI-
GINI DE LE FONTI MODENESI - SV LE MALATTIE DEGLI ARTEFICI - IL NO-
VELLO ATENEO AD ALTA FAMA CONDVSSE - A LA MEDICINA NVOVE VIE
APERSE CLINICA E IGIENE ASSOCIANDO A VANTAGGIO DEGLI VMILI AL
BENE DE L'VMANITÀ
NEL MDCC DA LA SAPIENZA DEL SENATO VENETO CHIAMATO A LA PRI-
MARIA CATTEDRA DI MEDICINA PRATICA IN PADOVA PER ANNI XIV - PVR
VECCHIO E SMINVITO NE LA VISTA - SPARSE ALACRE LVMINOSA DOT-
TRINA - LA PATOLOGIA E L'IGIENE DEL LAVORO ARRICCHÌ - CON SAGACI
STVDI SV LA PESTE BOVINA - CON VENVSTE ORAZIONI MEDICHE - NOBIL-
MENTE ESERCITANDO L'VFFICIO DI PRESIDE - A L'INSIGNE ATENEO - VII
VOLTE OGGI CENTENARIO - MAGGIOR LVSTRO E FLORIDEZZA CONFERÌ.
NATO A CARPI DI MODENA IL IV OTTOBRE MDCXXXIII - DA TVTTI E D'O-
GNI PARTE VENERATO - MORÌ A PADOVA IL V NOVEMBRE MDCCXIV.
MODENA IV OTTOBRE MCMXXII - CCLXXVII ANNIVERSARIO DI SVA NASCITA

Fig. 3.

inscription indicates that he occupied the 9th urn in the second year of the society but was the 635 urn in the fourth year from the founding of the society. The inscription implies that all others of the charter group joined with Polidorus Anchisius in the provision of this portrait. To the left of the second line is a Greek theta. This is the "Theta Niger" and in English is the equivalent of saying, "Now dead." This particular reproduction was taken from an article entitled "The Lives of Illustrious Arcadians," Rome, 1727. The work stands near the Corsinian section of the Royal National Academy.

IN THE Department of Geology and Mineralogy in the ancient University of Modena, a bust of Ramazzini is located. This appears as Fig. 3. The inscription below this bust, and in some other instances, would appear to most Americans as Latin. Actually, according to Dr. Meinecke, this is not Latin but old Italian—i.e., pre-Dante Italian. The Meinecke-Scanio translation is:

> BERNARDINI RAMAZZINI, chief physician of Francis II D'Este, with a formal oration on the 6th of December 1682 inaugurated this university re-established by the Duke at his (i.e., Ramazzini's) advice. Here for 18 years (he was) first professor of medicine through the excellence of his teaching—where he had as his colleague, Torti—with immortal works on epidemic illnesses—on the spouting (or bubbling forth) of the Modenan Springs—on workers' illnesses—he led the new school to great fame—he opened new methods to medicine by associating the clinic and hygiene to the advantage of the lowly (or humble folk) for the good of humanity. In 1700 through the wisdom of the Venetian Senate (he was) called to the first chair of practical medicine in Padua for 14 years—even though old and nearly blind—he spread unceasingly brilliant doctrines—he enriched pathology and hygiene—with wise studies on the bovine pest—with charming medical lectures—nobly exercising the office of president—in the famous school—now seven hundred years old—he brought (to it) greater fame and illumination. Born in Carpi di Modena 4th Oct. 1633—respected by all everywhere—he died at Padua 5th November 1714. Modena 4 Oct. 1922—289th anniversary of his birth.

WHEREVER Ramazzini's date of birth appears in this series, it is stated to be October 4, 1633. To the contrary, Dr. Legge states that various authentic items record the natal day as November 5, 1633, which, as to the month, coincides with the date of his death in 1714. In support, Legge refers to the record of Ramazzini's nephew, Bartolommeo Ramazzini, who, in the

Fig. 4.

first chapter in the Opera records the birthdate as November 5, 1633 (nones novembra 1633). Legge likewise cites *Il Lavora*, an Italian publication, which, in reporting the 200th anniversary of Ramazzini's death, recorded the birthdate as November 5, 1633. In other places may be encountered the observation that Ramazzini died on his birthday. This discrepancy, if such be the case, possibly could be accounted for in calendar adjustments being brought about in that century. It is well known that the birthdays of some of America's historic figures, as now celebrated, are not their true anniversaries.

It may be observed that Fig. 4 bears some resemblance to Fig. 3, but with an entirely different mounting. Identity is not claimed. This likeness appeared on a brochure prepared in Italy for distribution to the Ramazzini Society of America at the time of the Laurel Mountains session in 1948. The title of that brochure in modern Italian as translated into English is:

> University of Modena Yearbook for the academic year 1941-1942. Address by the rector at the unveiling of a bust of Bernardini Ramazzini, presented by his excellency, Guiseppe Bottai, Minister of National Education. Nov. 8, 1941.

The rector's address fails to mention the locus of this statue. This bust of the "Great One" was presented to the University of Modena by Dr. Addo Casagrandi, from Padua.

At Carpi, a small city near Modena and his birthplace, a painting of Ramazzini is lodged in the shabby art gallery of the municipal building. This was photographed to be included here as Fig. 5. This has been described as the original, but some belief is that this may be a copy. If a copy, the location of the original is not known. There was no opportunity to consult the local priests who ordinarily are well informed.

Fig. 5.

Fig. 6.

LIKEWISE, in Carpi, there is the stylized head of Ramazzini shown here as Fig. 6. This bears little resemblance to his better known simulacra and was designed only as an idealized image. Some residents of Carpi insist that Ramazzini, Carpi's native son, is buried beneath this bust. Actually, Ramazzini was buried in the Chapel of the Nuns of St. Helena in Padua. (Legge states that it was the church of St. Francis di Sales in Padua.) This would have been against his will since long and loudly he protested the unsanitary practice of burials in already overpopulated religious edifices. Necessity later led to the acceptance of Ramazzini's recommendation so that most large European cities, except in the instance of tremendous eminence, forbid interment within city limits. Even Westminster Abbey, that fabulous burying ground, is unable to accommodate further burials except as ashes after cremation.

During the late war (World War II) the

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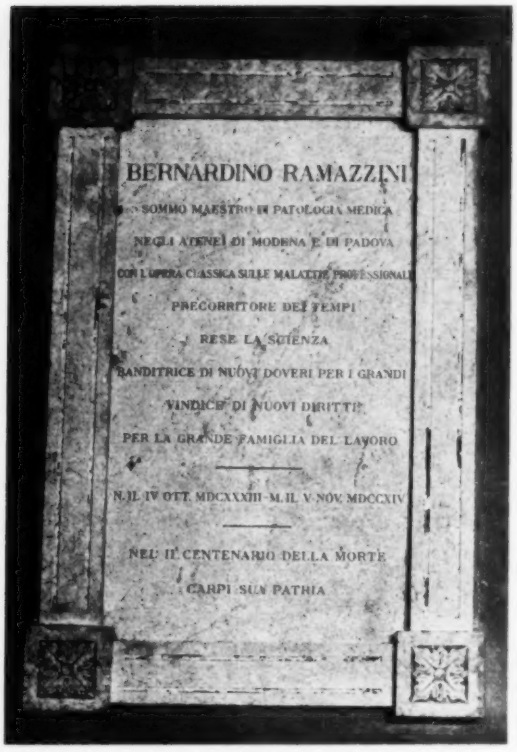
BERNARDINO RAMAZZINI
SOMMO MAESTRO DI PATOLOGIA MEDICA
NEGLI ATENEI DI MODENA E DI PADOVA
CON L'OPERA CLASSICA SULLE MALATTIE PROFESSIONALI
PRECORRITORE DEI TEMPI
RESE LA SCIENZA
BANDITRICE DI NUOVI DOVERI PER I GRANDI
VINDICE DI NUOVI DIRITTI
PER LA GRANDE FAMIGLIA DEL LAVORO
N. IL IV OTT. MDCXXXIII - M. IL V NOV. MDCCXIV
NEL II CENTENARIO DELLA MORTE
CARPI SUA PATRIA

Fig. 7.

Fig. 8.

Chapel of the Nuns of St. Helena, otherwise referred to as the Church of the Blessed Elena Enselmini, was severely damaged through the bombing. Professor Tanfani, professor of medical history at the University of Padua, reports that much was destroyed, nothing remaining but the walls. It is likely that Ramazzini's burial site was without coffin and unmarked. However there remains a stone marker, the inscription for which was prepared by his nephew, Bartolommeo, installed on the facade of the aforementioned church. Inscription on this stone, as translated by Dr. Meinecke, is:

> To BERNARDINO RAMAZZINI of Carpi, Philosopher and Physician in the University of Modena, the first in rank in Theoretical Medicine, Professor Primarius of Medicine, who at the greatest loss to Learning, older than the eightieth year, departed from the living on the Nones (the fifth) of November in the year of our Salvation 1714. In order that he might express his gratitude to his most celebrated uncle, his nephew Bartolommeo Ramazzini, Doctor of Medicine, cherishing most loving memories of a departed brother, has set up this Inscription. The University of Padua passed a decree that because Ramazzini, having achieved highest merits by the publishing of his books concerned with all of his studies, was the first to treat concerning the therapy of the diseases of artisans, this inscription is finally to be engraved on stone and to be placed near his tomb when the year of the third century since his birth arrives. On the 4th of October, in the year 1933, in the eleventh year of the administration of Carolo. Anti., rector, this was decreed.

COMMEMORATING the second centennial of Ramazzini's death is a plaque in Carpi, (here as Fig. 7). The Meinecke-Scanio translation is:

> BERNARDINI RAMAZZINI
> Eminent master (i.e., teacher) of medical pathology in the schools (lit. athenaeums) of Modena and of Padua through his classic work on occupational diseases, a precursor of the times, (he) made science a proclaimer of new duties for the great (and) a winner of new rights for the large family of workers (lit. family of labor)
> B. 4 October 1633 D. 5 Nov. 1714
> On the 2nd centennial of his death
> At Carpi, his native town.

This plaque is located in the gallery of the castle of Pio of Savoia in Carpi.

In the courtway of the Hygiene Institute of Parma Universtiy, where Ramazzini was a student, is a marble medallion of Ramazzini by Bazzoni, shown here as Fig. 8. Translation of the subscript is:

> Modena and Parma proclaim aloft the name of Bernardini Ramazzini. Carpi reclaims his birthdays and his glory. Parma with maternal pride remembers its claim to an eminent student of its secular wisdom, the first crown of laurel.

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No opportunity arose for direct observation in Padua or the university there. Likely there, and in other places, other likenesses might be located. One statue is known to be displayed in the Dresden museum. The knowledge and possessions of other physicians in this country and Europe may extend the known images of Bernardino Ramazzini, and this becomes desirable. In casting about for memorabilia of Ramazzini in the published world, over and over may be encountered his notable statement: "It is far better to prevent than to cure, just as it is more useful to foresee a danger and avoid it, even to run from it before it overtakes us." After all, that one quotation provides the best image of Ramazzini's mind.

From The Institute of Industrial Health, University of Michigan, Ann Arbor.

All photographs originating in Italy were provided by SIGNOR UGO RONCHETTI, a resident of Modena.

Doctors and Medical Campaigns

WHEN physicians themselves—they who are presumed continually to be alerted to the ravages of insidious diseases—fail to respond to fervid medical drives, then what may be expected of the general public? The record as to cancer, diabetes and heart disease among physicians is far from heartening. All such prompt Dr. Max H. Weinberg thus to write in the *Pennsylvania Medical Journal* for April, 1952:

A VERY illuminating article appeared recently in *J.A.M.A.** dealing with the question of physician-patients suffering from cancer who neglect themselves and mostly miss the opportune moment when a cure can possibly be effected. This best illustrates the fallacy of the belief held by many people, and especially by lay scientific writers in the lay press, that knowledge of the seriousness of a condition per se is an aid to prevention and a stimulus to seek prompt medical care.

"The study covered a period of 25 years during which 60 such patients with cancer presented themselves in the two hospitals where the study was carried out. It is not the writer's intention to review this excellent article, but rather to draw from it the valuable lesson it points to, namely, that actual experience goes counter to recent trends of various 'ballyhoo' mixed organizations of lay groups and medical men who naively think that all that is necessary is to acquaint the population with the seriousness of a condition and everyone will run pell-mell to his physician with the appearance of the first symptom. This idea is logical perhaps, but unfortunately human behavior is seldom based on logic. Emotional factors play a greater part in determining human behavior and, seemingly, it is so even in face of serious situations.

"A few figures will be cited from the article. Out of a total of 37 of these patients with four principal sites of cancer, only seven 'had primary lesions without either extension to the regional lymph nodes or distant metastases'; and 13 patients of this group of 37 'were deemed inoperable at the time of their original hospitalization.' In other words, 30 physicians out of 37, knowing full well the seriousness of a cancer once metastasized, nevertheless permitted themselves to become seriously involved, and 13 of them were considered inoperable when they reached the hospital.

"A curious thing is that in less serious conditions this apparent neglect of one's self in face of danger is not present and the author cites studies in which it is much better—in diabetes, for instance. He states: 'It was shown that the life expectancy of the diabetic physician was only four-fifths of one year less than that of the average physician.' The author concludes plaintively: 'Quite possibly this problem should have been approached by a psychiatrist rather than a surgeon since lack of insight and mental blocks undoubtedly play a dominant role.' Precisely so. The writer of these lines has taken this stand for many years, namely, that a great deal of the effort that is being expended in so-called adult or mass education is as good as wasted. If anything, it merely tends to upset the unstable and the neurotic elements, whereas the sound elements of the population are inclined to 'take a chance' and do not consult a doctor until they become seriously sick or handicapped. During a long period of medical practice, 40 years to be exact, the writer found this to be the case. Indeed, at times even the plainest of words, short of naming the dread word, cancer, does not convince people. Only recently the writer had the sad experience in the case of a close friend whom he persuaded to undergo an operation, which, to be sure, saved his life, of being criticized by a member of the family who insists that the doctors were all wrong; that the patient did not need the operation; and that it was a needless waste of funds as well as needless suffering.

"The question must then arise in one's mind, in view of this well-known attitude of 'taking a chance' on the part of people, whether the attempt at mass education, which is so prevalent now as is evidenced by the many organizations which are being formed to 'combat' serious and crippling disease, is not a waste of time, money, and effort, and whether it is not even an upsetting factor to at least the neurotic element in the community.

"The writer is convinced that this is the case and the opinion is offered that physicians at least should not encourage so readily the formation of these organizations, let alone take active part in them."

*BYRD, BENJAMIN F.: Fatal Pause in Diagnosis of Neoplastic Disease in Physician-Patient, *J.A.M.A.*, 24:147, November, 1951.

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General Motors Medical Conference

THE 14th Annual General Motors Medical Conference was held at the Netherland Plaza Hotel, Cincinnati, Sunday and Monday, April 20 and 21, 1952. This immediately preceded the annual meeting of the Industrial Medical Association. The Conference opened with registration at the Headquarters Suite on the 29th floor.

The activities on Monday began with a message of welcome from DR. MAX R. BURNELL, Medical Director, General Motors Corporation. He turned the meeting over to DR. R. B. ROBSON, of Walkerville, Ontario, who served as Chairman during the morning session, which consisted of the following presentations: "Eye Protection Program," DR. DOUGLAS J. WOOD, Medical Director, Cadillac Tank Plant, Cleveland, Ohio; "Low Back Pain," DR. FRED IRWIG, Medical Director, Chevrolet Division, Kansas City, Missouri; "Noise in Industry," DR. EARL F. LUTZ, Associate Medical Director, General Motors Corporation; "Continued Experience with the Harger Drunkometer," DR. H. K. MONTGOMERY, Associate Medical Director, Frigidaire Division, Dayton, Ohio.

DR. R. G. COLYER, Detroit, served as Chairman of the afternoon session. The following papers were presented: "The Doctor's Role in the Administration of Disability Benefits," MR. JAMES M. GILLEN, Director, Personnel Research, General Motors Corporation, Detroit; "Dermatological Problems in Modern Industry," DR. RAYMOND R. SUSKIND, Associate Professor of Dermatology and Associate Professor of Preventive Medicine and Industrial Health, University of Cincinnati College of Medicine. The afternoon session closed with a panel of the Conference speakers answering questions submitted by the audience. DR. CHESTER L. SAMUELSON, Medical Director, Harrison Radiator Division, Lockport, New York, served as moderator.

The Conference continued with a Reception and Banquet in the Pavillon Caprice Monday evening. MR. GEORGE A. JACOBY, Director, Personnel Services Section, General Motors Corporation, Detroit, acted as Toastmaster. The highlight of the entire Conference was an address by MR. L. C. GOAD, Executive Vice-President, General Motors Corporation, on "Industrial Medicine—Then and Now." His address stressed the great importance General Motors management places on the Health Maintenance Program carried on by the Medical Staff.

The formal portion of the Conference closed with DR. MAX R. BURNELL paying tribute to two General Motors physicians, DR. R. B. ROBSON, General Motors of Canada, Limited, and DR. R. G. COLYER, Fisher Body Division, Detroit, for meritorious service of more than 25 years.

Groups of General Motors physicians carried on informal conferences throughout the week at the G. M. Headquarters Suite where a display of medical gadgets was exhibited, arranged by DR. REEVE M. BROWN, Medical Director, Chevrolet Engine Division, Tonawanda, New York.

More than 100 General Motors physicians from the United States and Canada were present. They were honored by having three Medical Directors from abroad join in their Conference. These were DR. M. G. WOOLFF, Chief Medical Officer, General Motors South African Limited, Port Elizabeth, South Africa; DR. GERD CAROW, Medical Director, Adam Opel A. G., Russelsheim am Main, U. S. Zone, Germany; and DR. FELIPE TORRES, Medical Director, General Motors de Mexico, S.A. de C.V., Mexico, D.F.

Left to right: L. C. Goad, Executive Vice-President, General Motors Corporation; Dr. Gerd Carow, Medical Director, Adam Opel A. G., Russelsheim am Main, U.S. Zone, Germany; Dr. Felipe Torres, Medical Director, General Motors de Mexico, S.A. de C. V. Mexico, D.F.; Dr. Maurice G. Woolff, Medical Director, General Motors South African Ltd., Port Elizabeth, South Africa; Dr. Max R. Burnell, Medical Director, General Motors Corporation.

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INDUSTRIAL MEDICINE'S HALL OF FAME

John Ayrton Paris (1785-1856)

DR. PARIS was educated at Cains College, Cambridge University, receiving his M.B. in 1808, and was then appointed physician to the Westminster Hospital. During the years 1813 to 1817, he practiced in Penzance. In this period he made inquiries as to arsenical exposure in the smelting works of Cornwall and Wales. He wrote: "It may, however, be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain, in the copper

smelting works. This influence is very apparent in the condition both of animals and vegetables in the vicinity; horses and cows commonly lose their hoofs, and the latter are often seen in neighboring pastures crawling on their knees and not infrequently suffering from cancerous infections in their rumps. It is deserving of notice that the smelterers are occasionally affected with cancerous disease in the scrotum similar to that which infests chimney sweepers."

That portion of Paris' inquiry directed to the state of farm animals, and his reference to scrotal tumors were not supported by subsequent investigation. It is possible that as to the animals there may have existed an unrecognized epidemic of hoof and mouth disease. As to vegetables, it is more likely that sulpha compound was the damaging agent.

This portrait of DR. PARIS was taken by the National Portrait Gallery of London from a painting in the Royal College of Physicians and secured by DR. DONALD HUNTER, of the British Medical Research Council, Department of Research in Industrial Medicine.

His concern in the Cornish tin mines led him to invent a safety bar which prevented the premature explosion of gunpowder in rock blasting. In 1820 he wrote a notable book on pharmacology, "Pharmacologio on the History of Medicinal Substances." Paris is best known from the fact that the aceto-arsenate of copper is called in his honor 'Paris Green.' In 1844, at the age of 56, he was elected President of the Royal College of Physicians.

Sir George Baker (1722-1809)

SIR GEORGE BAKER, Physician in Ordinary to King George III, received his medical degree from Kings College, Cambridge 1745, Baronet, F.R.S.; was President of the Royal College of Physicians 1785-1795. On June 17, 1761, in the Theatre of the College of Physicians in London, he read a classical essay "Concerning the Cause of the Endemial Colic of Devonshire." This essay is perhaps the earliest description of an epidemiological investigation pursued on scientific lines, and is an example of sound meth-

ods of observation and experimentation, the value of chemistry, and a keen clinical knowledge of disease. He doubted the validity of Huxham's idea that colic caused by drinking cider was due to a tartar contained in the apple juice. Baker's own hypothesis was that tartar could

The portrait was taken by the National Portrait Gallery of London from a painting by OZIAS HUMPHREYS, R.A., that hangs on the wall of the Royal College of Physicians, and was secured for DR. ROBERT T. LEGGE, of Berkeley, California, by DR. DONALD HUNTER, of the British Research Council, Department of Research in Industrial Medicine.

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not produce colic, neither could pure cider as a beverage but that some fraudulent or accidental adulteration could be the factor. As a true investigator he found that the inhabitants of nearby Worcestershire and Gloucestershire who drank much cider—did not have colic. Backed up by his clinical knowledge and the improbability that a cause other than lead would produce the symptoms, he proceeded to investigate along these lines. He ascertained in a five-year case study in the Exeter Hospital that there were 285 patients admitted with colic and paralysis of the arms. An average of eight of the cases came from Devonshire to one from the other counties. He then surveyed the cider mills and found that the mooring stones that crush the apples in the trough were bound together by clamps in the interstices of which melted lead had been poured. The acid juice came into contact with the lead, thus suggesting, and through consequent chemical analysis proving, that the etiological factor was lead. Lead was not found in the Herefordshire product. This concluded a piece of research in lead poison, and definitely solved a problem in endemic disease that for generations had caused much morbidity and mortality, that of the famous Devonshire Colic.

Baker was denounced from the pulpit by the Rev. Thomas Alcock as a faithless son of Devon, for his pains, and by Francis Geach, F.R.S., who did not support Baker's theory. Yet in the course of time the colic disappeared from the county, and Baker was honored by the King, the Royal College of Physicians, and the people of England.

The Problem of Air Pollution

THE AIR pollution problem is basically one of undesirable effects. There is too much dirt, unpleasant odor, decreased visibility, eye irritation, damage to crops, corrosion of building materials, discoloring of paint, or injury to health. It is not enough to speak in general or qualitative terms. The effects must be quantitatively evaluated. Some effects can be evaluated on the basis of present knowledge. On the other hand, while much is said about the effects of air pollution on health, a true evaluation in a quantitative sense is not available. The need for comprehensive basic research is obvious. Evaluation of the effects is only the beginning. The next step, finding what produced the effects, is even more complex. This entails the development of precise analytical tools to sample the atmosphere, to identify and quantitatively determine the offending agents. Here again, we are confronted with the need for fundamental studies, as the contaminants are numerous, and they are present in extremely minute amounts. Furthermore, we are not only concerned with contaminants discharged into the air, but also with the reaction products that are formed in the atmosphere. Accurate and precise data on the properties of air pollutants are the keystone of air pollution investigations. Knowing the culprits is not enough. We must know their habits. What happens to them after they become a part of the atmosphere? This brings up the question of meteorology. If the elements are kind the pollutants may vanish into space; but if the elements are contrary, they may allow the contaminants to accumulate to levels which make their presence felt in many ways. Meteorology does not produce the contaminants, but it does determine where they go. In other words, pollutants are not isolated molecules or particles, but a part of a dynamic system. Information on effects, determination and properties leads to the final step—control. This phase of the problem requires not only basic research to provide fundamental knowledge, but applied research as well to develop practical methods and procedures. The language of the scientist must be translated into the language of the laymen so that he can understand the true nature of the atmosphere pollution problem. The public relations aspects of the problem are paramount.

—Abstract of a Presentation by DR. H. H. SCHRENK, Research Director, Industrial Hygiene Foundation, entitled "A Scientist Views the Problems of Air Pollution," at the Second National Air Pollution Conference, at Los Angeles, 1952.

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INDUSTRIAL MEDICAL ASSOCIATION

The President's Page

THE responsibilities of the officers of the Industrial Medical Association were thoroughly explained last year by Dr. Kammer, however, I have had many requests from members of the IMA to describe the functions and responsibilities of the officers, the Executive Committee, the Board of Directors, and the various committees.

The Executive Committee of the Industrial Medical Association is composed of the President, the President-Elect, the First Vice-President, the Second Vice-President, the Secretary, and the Treasurer and Managing Director. According to the by-lays, the President assumes the responsibility of the business of the Association between meetings of the Executive Committee and the Board of Directors. The Executive Committee reviews the business of the Association and the affairs which are delegated to the Executive Committee according to the by-laws. It makes recommendations to the Board of Directors when action of the Board seems advisable. A great deal of time is saved for the Board of Directors by having the Executive Committee review the routine order of business and pass to the Board only those affairs that need the action of the entire Board. The Board of Directors of the Association consists of the six Officers and the 12 elected Board members.

According to the practice which was so well established by Dr. Kammer, it is the plan of the Executive Committee to continue to delegate specific responsibilities to each Officer during the coming year. These assignments deal with the broad fields of: (1) the activities of the American Foundation of Occupational Health; (2) the direction of the work of the district counselors; (3) the coordination of the work of the Association's standing committees; (4) the secretarial recording of the Association; (5) and the business administration of the Association.

The President of the Industrial Medical Association is Chairman of the Board of Trustees of the American Foundation of Occupational Health and as such has certain duties and responsibilities, however, the Foundation activities have been assigned to the First Vice-President, R. C. Page. During the past year Dr. Page administered the affairs of the Foundation in such an able manner that it was deemed advisable to have him continue this activity for another year rather than delegate it to one of the other officers. The progress of the Foundation will be reviewed in a future article.

The President-Elect, George F. Wilkins, has the responsibility of coordinating the activities of the district counselors and the component societies. Dr. Wilkins keeps the Executive Committee informed as to the activities of the component societies and the district counselors. The functions of the district counselors have been found to be of extreme importance to the Association. To make this more effective the Executive Committee thought it advisable to divide the country into more districts, thus reducing the area to be covered and enabling the counselors more easily to carry on their activities. We hope the counselors will be instrumental in stimulating our drive for new members, and will assist the members in the matter of Fellowship.

ACCORDING to the by-laws, the President has the responsibility of appointing the standing committees of the Association. The committee functions can be divided into three broad areas: policy, administrative, and scientific. In spite of the fact that this is the President's responsibility, during the past year the Executive Committee discussed the committee appointments in order that the personnel could be carried on from one administration to the next so that the achievements of the committees would not be terminated with the passing of one President. To make the action of the committees more effective it was thought advisable to continue most of them during the coming year. The responsibility for the committees has been delegated to the Second Vice-President, Fenn E. Poole. The definition of assignments and the development of methods of carrying on the committee work are made by Dr. Poole. In most instances the committees are the same as during the past year, however, in the case of some committees the membership has been expanded. Dr. Poole carries on a close liaison with the committee chairmen. In this way he keeps the Executive Committee informed as to the activities of the various committees.

The distribution of the administrative functions of the Executive Committee during the past year was so satisfactory that it is expected to be perpetuated in the future. This plan of action gives each member of the Executive Committee adequate training in the various phases and functions of the Association. Each Officer in turn has contact with the functions of the

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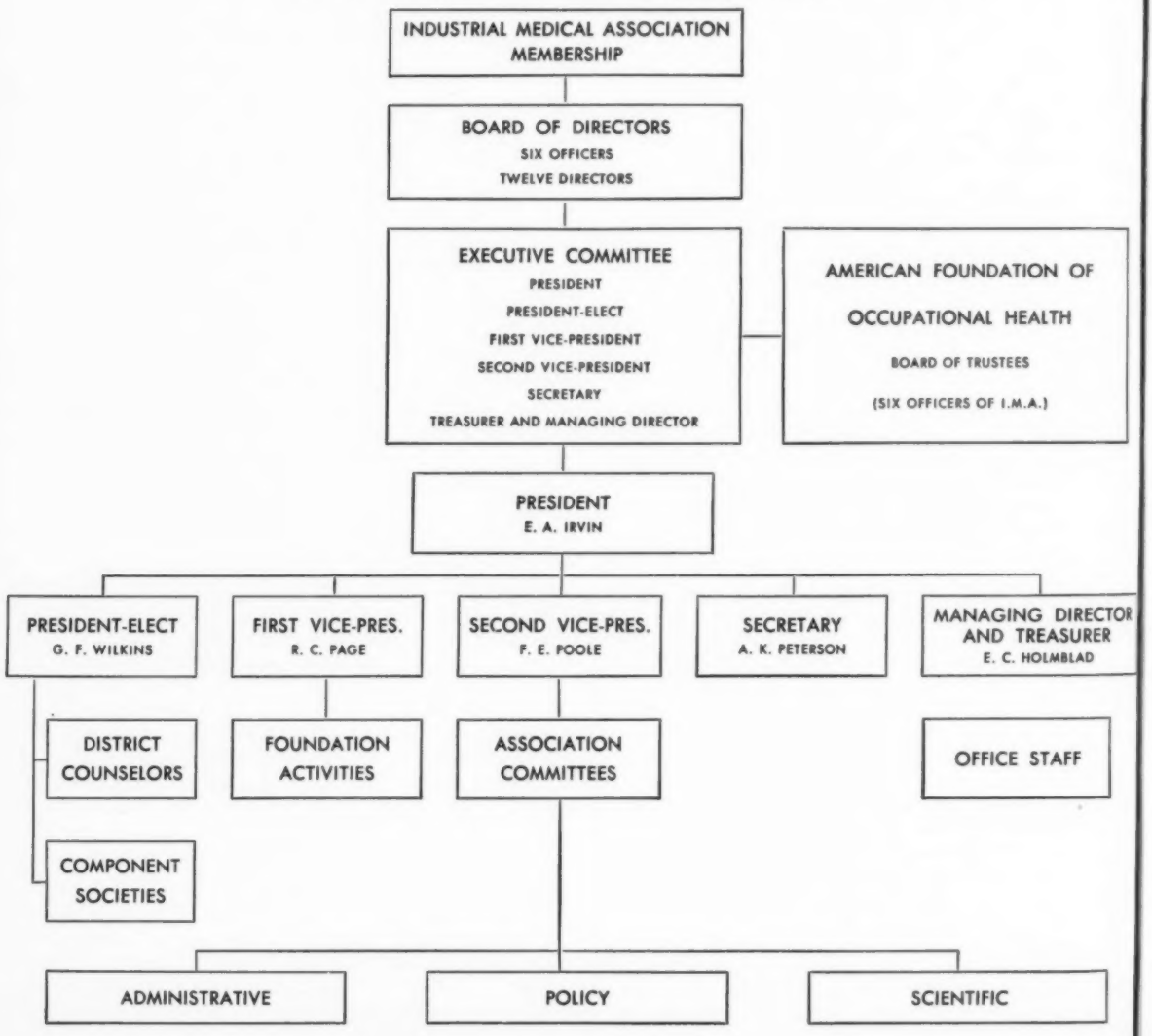
Secretary and Managing Director, and becomes completely familiar with the business of the Association. In this way when the Officer assumes the Presidency he is familiar with the administrative functions of the Association, and as a result he may serve the organization more effectively. By having the Executive Committee review the committee appointments, appointments of district counselors, long-term planning for the Association, long-term programs of study, and the financial planning of the Association, it gives the organization a continuity of action which otherwise would not be possible. We, of the present Executive Committee, believe that this administrative function is of great value to the Association and we hope it meets with the approval of the membership. Each of us would like to receive comments, suggestions, and even criticism, from any of the members. We have been chosen to serve you, and may only do this if we know the wishes of the membership.

E. A. Irvin, M.D.

ASSOCIATION NEWS

THE following is the Organization Chart of the INDUSTRIAL MEDICAL ASSOCIATION, showing graphically the division of duties and responsibilities described above by DR. IRVIN.



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HARVEY BARTLE and HOWARD E. BRICKER, in recognition of their long years of service in the field of industrial medicine, were honored at the Annual Meeting of the PHILADELPHIA INTERSTATE ASSOCIATION OF INDUSTRIAL MEDICINE, May 21. Testimonials were given them, engrossed as follows:

"Distinguished among his fellows for over four decades of meritorious service and leadership in Occupational Medicine, an imaginative and determined pioneer who has reflected superior credit upon himself and upon his medical associations, HARVEY BARTLE, M.D., is acclaimed by the PHILADELPHIA INTERSTATE ASSOCIATION OF INDUSTRIAL MEDICINE. Cited in Philadelphia this 21st day of May, 1952."

"Distinguished among his fellows for his farsighted and resolute leadership, across nearly a half century, in guiding Industrial Medicine from the limited scope of reparative surgery into the broad fields of complete health maintenance, HOWARD E. BRICKER, M.D., is acclaimed by the PHILADELPHIA INTERSTATE ASSOCIATION OF INDUSTRIAL MEDICINE. Cited in Philadelphia this 21st day of May, 1952."

NEW ENGLAND INDUSTRIAL MEDICAL ASSOCIATION and the Section on Industrial Health of the Massachusetts State Medical Society held a joint luncheon meeting Wednesday, May 21, during the Annual Meeting of the State Society. An address on "Some Important Features of an Industrial Medical Program" was given by GEORGE F. WILKINS, M.D., President-Elect of IMA. There were 104 present at the luncheon, including physicians, nurses, executives, and safety personnel. At the morning session of the State Society on the same day, J. F. MCCAHAN, M.D., Assistant Secretary of the Council on Industrial Health, AMA, presented a paper on "Medicine and Industry—Occupational Health."

REPORTS of the 1951-52 IMA standing committees, as submitted to the Board of Directors at the Annual Meeting in Cincinnati, April 22, are available at the headquarters office. Anyone interested in the report of a specific committee may procure a copy by writing to the Managing Director at 28 East Jackson Boulevard, Chicago 4, Illinois.

BOOKS

All About Noise

NOISE: Causes, Effects, Measurement, Costs, Control. The University of Michigan School of Public Health and Institute of Industrial Health, Ann Arbor; pp. 192, $5.00 (single copies).

WHAT the review reader wants to know about this book is: "Is this authentic and new? Will I and my work profit by having this book on my desk? Is it worth the price charged? How do I get a copy?"

The contents of this volume are the product of the best minds the country over, in the realm of sound and noise. These minds have revealed that the land no longer merely is threatened with a legal assault because of noise affront, real and imaginary. Threat has given way to actuality. Painstakingly and objectively the authors raveled the physiologic insults stored in unwanted sound in its impact upon the human hearing organs. To substantiate ultimate conclusions, it became profitable to present in full detail the anatomy and physiologic mechanisms of the hearing apparatus, the sites of noise damage, the nature of this damage, the quality and quantity of the offending vibrations, and how the offender may be measured. In orderly course the inevitable conclusion was reached that noise may injure the auditory organs, and loss of hearing, temporary or permanent, may be the consequence.

A meeting of minds having been reached, the next step for appraisal became "Can noise be avoided and controlled, and, if so, how?" Learned speakers with publishable manuscripts provided constructive answers. Their contributions established a consensus. Noise *can be* avoided or abated, but not always is the process easy, and highly different approaches are called for in defeating the numerous sources of injurious noise.

All this provided the scientific groundwork. The biologists, the physicians, the engineers, the industrial hygienists had had their say. Then came attorneys, the compensation board members, the adjudicators. And with them came endless dilemmas, riding on horizontal question marks for ski runners. Does noise always produce occupational deafness? How common is ordinary deafness as a part of the processes of ageing? How disabling for continued work is some loss of hearing from noise or ageing? How does one differentiate between these two causes? Does some loss of hearing facilitate work in some trades? Are some persons overly sensitive to noise injury? What is a proper standard of noise levels below which noise is not damaging but still might be annoying? When and under what circumstances should compensation be paid for noise hearing loss in industry, and how much? No simple answers were provided. Noise and noise deafness are realities, but appraisals are a frightening complexity.

The sum total adds up to this book. For $5.00 the results of some $5,000,000 worth of tangible research expenditures become available, along with incalculable millions of units of experience that provide authoritative opinions. Foremostly, credit is deserved by those scientists who came and instructed, themselves gaining monetarily only to the extent of out-of-pocket expenses, and not always that. Only slightly less acclaim is deserved by the University of Michigan's School of Public Health which organized this training period for the profit of public health and occupational medicine—ultimately the industrial producers of the country. This book is solid evidence that that school is successful in its major objective—instruction! Wherever the need for information on NOISE, here is the voice of authority.

As They Are

POISONING: W. F. VON OETTINGEN, M.D., PH.D. Paul B. Hoeber, Inc., New York, 1952, pp. 506, $10.00.

SO SATURATED are industrial physicians in industrial poisoning they are likely to overlook the fact that there are many others. But DR. VON OETTINGEN never forgets. This book covers all of the major poisons, by number 461, with appropriate consideration for those both in and out of industry. While this whole text is devoted to poisoning, a hasty look provided no definition as to just what a poison is. That may reflect DR. VON OETTINGEN'S

astuteness, since a definition of a poison that will hold up in court and satisfy everybody is as difficult as anything requiring definition.

Most physicians dealing with poisons, particularly in the court room and particularly if testifying for the defense, carefully avoid the use of the term "poison." That is a scary word. Once heard, even by a patient who was never exposed, that patient is prone to go off into some form of nervous breakdown perhaps worse and further prolonged than the consequences of some poisons. DR. VON OETTINGEN is bold. He calls them poisons and entitles his book "Poisoning." And so it is.

This book dispels one tradition. Particularly in industrial toxicology it is a dispostion to believe and state that all is prevention and diagnosis. Treatment beyond emergency care is nothing. That fallacy is made to disappear by the author's precise outlines of treatment directed to many forms of poisoning. Even that section devoted to manganese poisoning includes three lines guardedly referring to that bizarre and somewhat hopeless neurologic state. In the coverage provided by many books devoted to toxicology there are outstanding gaps—gaps that need to be filled. Adequately, this book fills in one of the gaps—treatment. This is no mere listing of half worthless antidotes for poisons; this is an exhaustive authoritative guide to clinical diagnosis and treatment.

"You Are Old, Father William . . . ."

COWDRY'S PROBLEMS OF AGEING. Third edition edited by ALBERT I. LANSING, PH.D., Washington University, St. Louis. The Williams & Wilkins Company, Baltimore, 1952, pp. 1061, $15.00.

METHINKS we book reviewers admitting the sixtyish and seventyish, were born a generation too soon. The blandishments proffered by geriatrics and gerontology spur a tremendous urge to stay around for their full flowering. This book is just a mite pessimistic, promising less but hopeful of more. Of that pessimism, more later.

Some say that the process of ageing begins with the fetus; others have pinpointed almost every age from 35 on as the start of the "declining years." For most physicians, however, the "problem of ageing" has little to do with calendar years. Their chief problem is the need to distinguish between, on the one hand, the changes that are natural and only to be expected in the ageing body and, on the other hand, the chronic and degenerative conditions that appear most frequently in the later years.

Both normal and pathological aspects of ageing are thoroughly covered by LANSING'S 48 contributors. Some chapters discuss the body from the biological and cellular angle, some treat of specific clinical or organic problems, and still others consider the social and economic adjustment of older people. Each chapter presents information that is vital to every physician in practice today—since the average age of his patients will continue to reflect the fact that ours is an ageing population. Health is a basic factor in personal adjustment at any age—and the elderly individual must be taught the physical practices and mental attitudes that are conducive to a healthy and therefore contented old age. In this new third edition of a widely known book, now thoroughly revised and completely reset under the guidance of its new editor, A. I. LANSING, the physician will find all the facts he needs in order to instruct his older patients in a health-conserving regimen, to recognize their characteristic diseases, and to add not merely years to their lives but life to their years.

Representatives from 14 nations meeting in Belgium in July, 1950, agreed that a Second International Gerontological Congress would be helpful. This Congress was held in St. Louis September 9-14, 1951, with the cooperation of the U.S. Public Health Service, through the National Advisory Heart Council, and supported by a grant from the Macy Foundation. The Foundation also arranged a meeting of its conference group on ageing immediately before the Congress, at which the directors of the four Congress sections were able to visualize an harmonious and effectively integrated Congress program. This informal exchange of opinion provided clues to some of the most important and feasible objectives in gerontology. In a measure this book leans upon the accomplishments of that Congress.

On the whole a spirit of pessimism pervades some of the contributions of the 48 authors.

DR. COBB urges caution in interpretation of many of the almost classical views on ageing of the skeletal system; new data are slow in appearing. DR. BICKERMAN summarizes a wide variety of diseases of the respiratory system associated with ageing and finds that the situation is confused. And so it goes. Research on the biology of ageing is almost at a standstill. There is hardly a handful of workers in this area today. Our population is rapidly becoming an old population. There is a sense of urgency in attacking the so-called degenerative diseases which take such a heavy toll of mature and elderly adults. It may be that the sources of funds for research are supporting clinical and allied research on ageing to the effective exclusion of biology. This may be an unwarranted suspicion; it is equally possible that were more funds available for gerontology, all areas of research, including biology, would flourish.

Throughout the book there is expressed a need for clarification of the relation between degenerative diseases and ageing. Just what do we mean by ageing and degenerative diseases? It seems that neither is well enough defined to permit a rational distinction between the two. If we accept the view that ageing begins at the time of conception, we rapidly get into difficulties. Gerontology becomes the study of the biology of living. It is not believed that gerontology includes study of the development of the fetus or of the physiologic and psychic throes of adolescence. Ageing, to my mind, is a problem of adulthood, of generally progressive deleterious change in adulthood, correlated with the passage of time. Some of these changes may be classed as diseases and may, indeed, be curable or reversible. Others may involve profound alterations in the physiochemical make-up of protoplasm, and as such may be irreversible. But regardless of reversibility or specific etiology, all these changes constitute ageing.

The now fully ageing await expectantly!

Hair—On and Off

THE SCALP IN HEALTH AND DISEASE: HOWARD T. BEHRMAN, A.B., M.D. The C. V. Mosby Company, St. Louis, 1952, pp. 541.

A RECENT correspondent inquired, "What would old Ramazzini think if he could see his beloved

medicine broken up into so many pieces that no longer is there any specialty without subdivisions?" No one may answer for Ramazzini, and he is unable to speak for himself. One guess is that Ramazzini would rejoice in the great expansion of medicine to the point that many specialties and many subdivisions are justified, provided the body as a whole never is forgotten.

This book exemplifies just that situation. The scalp, with its appendages, is just one portion of the body's largest organ, the skin. This is a full-sized text, but never is the material forced. It flows from the author's pen in endless abundance. It is a bit astonishing that the scalp with its appendages should be the locus of so many afflictions. It is the thesis of the book's "Foreword" writer that hair is expensive. Says he:

"Think of the millions spent on bleaching, tinting, and dyeing it; on curling, on waving, or on straightening it out; on cutting it and on shaving it off; on destroying it or on trying to make it grow; on making it lie flat or on making it stand up; to say nothing of the switches, transformations, chignons, and other supplements to fill out its deficits."

It may be a tossup as to what portion of the external body is most expensive, the hair, the teeth, or the nails. The odds run to the hair for the big check.

This book is not entirely on diseases. A sizeable portion discusses shampoos, lotions, setting agents, lacquers, wave preparations, hair creams, hair straighteners and dyes.

Immediately and perhaps appropriately in that chapter is a discussion of dermatitis, with implications that not everything applied to the hair is starkly harmless.

With the advent of women in large numbers to industry, the tribulations and worries of the industrial physician multiplied way out of proportion to the numerical addition of workers. Every woman worker possesses a few fixed notions, one of which is that work of any nature is always harmful to her hair. Her complaints blame dust, cold, heat, lighting facilities, ultra-violet rays, industrial solvents, industrial soaps, etc. Sometimes she is right. It has been said that there are three degrees of cantankerous women: "fool women," "damn fool women," and "women who are developing alopecia." In case a woman worker begins to lose her hair in sizeable lots, even the executive board of Hell would run for cover.

Everything in this book is of value to the industrial physician as well as every other physician. Perhaps its chief worth is the mounting evidence of highly numerous agents likely to be applied to hair that may bring about the very condition apt to be attributed to work causes. There are, indeed, a few specific agents of industry conducive to hair loss. At least one of the intermediates in synthetic rubber production is a precise work depilatory. This reviewer cut his delayed molars on an arsenic poisoning epidemic in which workers' hair came out by the handful. But, the number of offending work agents is small. More often the causes of abnormalities of the hair and scalp are brought in to the place of work rather than originating there.

This book arrived for review during that week when the price of a man's hair cut rose to $1.50. Getting hair off the head, in addition to keeping it there, is becoming expensive.

"Pathogenic Situations"

THE STORY OF THE ADAPTATION SYNDROME: HANS SELYE, M.D., D.Sc., F.R.S., Professor and Director of the Institut de Medecine et de Chirurgie experimentales. Universite de Montreal, Acta, Inc., Montreal, 1952, pp. 225.

IN A BRIEF review of a cognate publication by the same author, some confusion was admitted as though the reviewer had come upon the scene only during the fifth reel of the feature. Perhaps for the benefit of large numbers of equally perplexed readers, Dr. Selye has prepared in book form the entire story of the Adaptation Syndrome, starting long before the birth of his concepts. Step by step, in planned subjectivity, personal and intimate, the story is unfolded.

By the end, the essence becomes apparent, now stated in Dr. Selye's language:

"Now the great problem in endocrine physiology is no longer: 'What do the hormones do?' but 'What adaptive reactions do they influence?'

"Now the great problem in endocrine pathology is no longer: 'Which diseases are caused by the excessive function or destruction of an endocrine gland?' but 'In which diseases has the endocrine status a decisive influence?'

"Indeed, even apart from endocrinology, the principal endeavor of medicine in general is beginning to change. It is no longer the search for specific pathogens and for specific remedies with which to eradicate them. We always used to accept as a self-evident fact, that each well-characterized individual disease must have its own specific cause. This tenet is self-evident no longer. It becomes increasingly more manifest that an agent does or does not produce disease, depending upon a variety of conditions, some of which have now been definitely identified as being determined by the 'adaptive hormones.'

"There begins to emerge a new and somewhat more complex pathology in which the main objects of our study are no longer individual 'pathogens,' but rather 'pathogenic situations'."

Massage

MANUAL OF MASSAGE AND MOVEMENTS: EDITH M. PROSSER, T.M.M.G., Trained Nurse and Certified Midwife. Illustrated. J. B. Lippincott Company, Philadelphia, 1951, pp. 388.

EVERY person, patient or healthy, wants a bit of massage—but try to get it. Only the bridegrooms of less than one year's standing are so favored, but that is not the kind of massage well covered in this book. Loudly the medical profession shouts that its relation to patients should include "more laying on of hands." The shouting persists but the hand work is sadly missing. Always with exception it may be pointed out that the usual physiotherapy department of hospitals or industrial medical health dispensaries is overly cluttered with mechanical devices—lamps, heaters, baths, soaks, powered flippers and rollers—hands have somewhat disappeared.

One formula for prospective success for the young practitioner would direct him to hire as soon as able a competent masseuse and keep her busy. There might be some overuse, but in any case he would soon be the most popular rising young physician in town.

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This publication, "Manual of Massage and Movements," is sincere in the presentation of a wide variety of hand activities and exercises for the instruction of students and for the betterment of health and comfort of the patient.

This good book, which is of English origin, gets off to a bad start in its introduction. There appears a lot of banalities, important enough to the student addressed, but serving only as a repellent to other would-be disciples. When the text starts off, "Students should be punctual at roll call," and a little further down, "At all times students should be restrained and quiet, especially in the hospital precincts," and "When treating patients there should be no chatter for this is a habit that quickly tires the patients," something has been introduced that the publisher would do well neatly to tuck into an appendix. Soon, however, the book passes into more engaging matters.

Throughout this work are technical terms descriptive of manual actions that perhaps are familiar enough to the professional masseuse, but which constitute a strange language for some physicians. The author purports to make clear such terms as "petrissage," "tapotement," and "effleurage," but never quite fully provides sufficient clarification for the inexperienced. In good time a wealth of material is introduced referable to every portion of the body. The reviewer becomes well impressed with the virtues of this form of therapy despite alarming recommendations as to "hacking, clapping, beating, and pounding"; it sounds like murderer's row, but it isn't.

This volume is far more serious and technical than this well-meant facetious review. In a soberer vein, let it be recorded that massage in the United States is a well-neglected art. On this account perhaps the medical professions deserve censure. This book with its many instructions should go far in providing escape from this blameworthy state. Physicians, nurses and attendants in industrial medical departments are woefully lacking in massaging techniques. Seemingly, the hurly-burly activities in all of American lives, including industrial medical measures, lead to low values on the comforting but time-consuming procedures of massage. Maybe we should mend our ways. Right now the reviewer is a candidate for some gentle massage—but no hacking, please.

Dress

PHYSIOLOGY OF HEAT REGULATION AND THE SCIENCE OF CLOTHING: Edited by L. H. NEWBURGH, M.D. W. B. Saunders Company, Philadelphia, 1949, pp. 442.

THE ART of clothing began with the legendary Eve. Ever afterwards that form of artistry unremittingly has been pursued—at least by women. Always the objective has been to annoy other women —but softened just a bit with the hope of attracting approbation from malekind. This thralldom of the art of habiliment has enriched the modiste and the couturier. Only a few lands have escaped, notably the Highland Maya Indian. Village by village, the men, the women and the children, after their own kind, dress identically, only with tiny variations for the widow, the widower, and the pilgrim. In a measure that may mark them on a sartorial basis as the most highly developed of all tribes—so believes the man with the flabby pocketbook. The science of clothing never got a toe hold, nor did it try.

The science of clothing had feeble beginnings long ago when large numbers of Europeans and Americans found themselves in the tropics and near tropics—such as the British army in India. Puny scientific approaches, by the time of the late and disgusting global warfare, gave way to full-fledged scientific inquiry. The overloaded infantryman trudging over a desert at a dripping 110° F, dreams not of a Fifth Avenue tailor but of a "G string." His counterpart, groping about in the winter fogs of the Aleutian Islands, remembers his college days' coonskin coat, and pines for four of them.

That is what this book, in erudite fashion, is all about. After Part I, prepared by an impressive battery of contributors, devoted to such items as "Heat Transfer" and "Physiologic Adjustment to Cold," comes that even more attractive Part II, dealing with clothing and no clothing, desert and tropical life, wet cold, wetness, keeping the hands warm. All this is covered impressively. Mention is made of the one-layer races, the two-layer, and so on. The learned author might have begun with the "no-layer" addicts and ended up with "all-you've-got" layers. Since this is written near the fateful March 15 deadline, it is observed that for many non-tropical Americans, the "all-you've-got" layers precariously are threatened with "oneness." At every opportunity this Journal declares its belief that American men do not know how to dress in summer—nor the women in winter. Now comes support from a high place—The National Research Council.

Current Highlights

MEDICAL MILESTONES: HENRY J. L. MARRIOTT, M.D. The Williams & Wilkins Co., Baltimore, 1952, pp. 284, $3.50.

IT IS A BIT appalling that medical books directed to the laity often prove to be the chief source of information for physicians. This book is so brightly written that even physicians may understand. It has a flavor of its own, but is not overseasoned. It is not a book of the major medical milestones from the time of Hippocrates, but current ones. Understandably, it revolves about Sir Alexander Fleming and penicillin because the author, for a period, was identified as an associate with Dr. Fleming. The book furnishes the drama that always attends medical discoveries but which studiedly are omitted from ponderous scientific records. The language of the author is superb. Gaity marks every page. Thus, "The expression on the face of leprosy has brightened almost beyond recognition in the past decade." And again, quoting Osler as to his propensity for trenchant overstatements: "Believe nothing that you see in the newspapers.... if you see anything in them that you know is true, begin to doubt it at once." The book ends with this sagacity, "Time.... is the great graveyard of the big ideas." Aside from the antibiotics, the author's colorful brushes portray the remarkable in the treatment of the anemias, heart surgery, the RH story, Bal, new drugs in leprosy, cortisone, malaria, DDT, dramamine—among others. This reviewer thought he knew quite a bit about all such items. Now he knows more. The book is written in verbal technicolor.

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The Beginnings of Occupational Health in the United States

WITH understandable pride the Department of Health of the State of Pennsylvania, in a recent publication on industrial hygiene, lays claim to a "first" in the protection of health of the industrial worker, and documents its assertion. This language appears: "Pennsylvania was the first State in the Union to initiate measures for the prevention of illness and the protection of health of the industrial worker. This historic fact is noted by Dr. Wilson G. Smillie, in his authoritative book 'Public Health Administration in the United States.' It states: '. . . . Industrial development in the United States began with the introduction of the textile industry in the early years of the last century. It resulted in the exploitation of child labor. Initiation of industrial hygiene measures may be said to have begun with the first child labor laws of Pennsylvania in 1848 . . . .' "

This claim is not disputed or assailed. It well serves as a springboard for questing as to related activities of that early period. So long ago as 1786, the ever-delving Benjamin Franklin, through ratiocination rather than laboratory procedures, established that the condition called by him "West India Gripes," or just "Dry Gripes," was lead colic due to drinking rum prepared in stills in which the heads and worms were made of lead. Promptly the legislature of Massachusetts banned this use of lead. This protection was in behalf of rum consumers rather than rum makers, and thus may not be labeled industrial hygiene.

If mere awareness of deplorable work conditions together with mild recommendations as to prevention might mark the beginning of occupational health measures, which is not here claimed, such beginnings were much in evidence soon after the arrival of the nineteenth century. Benjamin McCready, although leaning heavily upon his British contemporary, Thackrah, in 1837, portrayed a full array of unwanted work conditions throughout the land, from agriculture to textiles. Charles Dickens, while not medically qualified, wrote much near 1842 in his "American Notes" about factory work places and factory workers. Pennsylvania's claim centers about child labor laws, but, if that be the sole basis, it may be observed that both Massachusetts and Connecticut enacted laws related to child labor as early as 1842. In 1842, New Hampshire legally established limited hours of labor for women in industry.

WITHOUT sponsoring any of these mentioned "firsts," it may be believed that the original substantial *major* contribution to industrial hygiene appeared only so recently as 1909 when J. B. Andrews and the American Association for Labor Legislation achieved the banishment of white phosphorus in the match making industry. This resulted from the well planned imposition of prohibitive taxation on white phosphorus matches, thus paving the way for the era of safety matches. This attainment followed long years of deforming injuries termed "phossy jaw," rightly attributed to the destructive action of phosphorus. As early as 1855 the readers of this country were shocked by records of that devastating occupational disease. This was the

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first full-dress victory in this country over a direful occupational disease.

The pride of Pennsylvania in its claim is shared and accepted as laudable. The truth, as readily will be agreed, is that the real beginning of few things is exactly and fully removed from debate. The importance of all such fades into greater importance that groping beginnings were made and these mightily multiplied until the entire land, with Pennsylvania as a forerunner, now is fully alerted to unstinted conservation of the industrial worker's health.

Johns-Manville Provides a New Day

IT IS NO matter of debate that numerous valuable industrial materials unfortunately possess properties constituting threats to workers, provided exposure be sufficient. Some of these substances are so toxic as to require warning labels sponsored by the Federal government for interstate shipments. Many toxic substances not requiring official labeling are vended under divers trade names that effectively conceal true chemical constituency and by so doing conceal the fact of potentially harmful properties. In fact, it is known to be a calculated practice in some quarters to apply innocent appearing trade names partly for the purpose of concealment.

This is certainly not the practice of Johns-Manville Corporation, which lately has sent to all of its customers of "Celites," a notice fully disclosing the contents of these powders and drawing attention to the fact that undue exposure over a long period may be disastrous on occasions. This attitude is admirable. So overt is this notice seeking to protect alike the worker, the employer, and Johns-Manville Corporation, that the entire text here appears:

NOTICE: Celite powders and aggregates are prepared from diatomaceous silica which, chemically, is composed of amorphous silica. When this material is calcined some of the amorphous silica becomes crystalline in nature. In view of the fact that the mining and manufacturing trades and industries using silica products have definitely found that crystalline silica tends to produce harmful effects when an individual inhales such dusts over extended periods of time and, further, that inhalation of all dusts is harmful and detrimental, we are calling your attention to the composition of our material by those notices, which are being printed upon all bags containing this material.

"The following is the inscription on containers holding our natural, uncalcined products:

CAUTION: 'Celite' materials consist of an almost pure, amorphous diatomaceous silica. Inhalation of silica dust over long periods may be harmful. The material should be used so as not to create dust, or—if this is not possible—employees should be equipped with adequate protective devices.

"And on containers of calcined products the following will appear:

CAUTION: 'Celite' materials, derived from diatomaceous earth, are almost pure silica—partly amorphous and partly crystalline. Inhalation of silica dust over long periods may be harmful. The material should be used so as not to create dust, or—if this is not possible—employees should be equipped with adequate protective devices."

IT IS TRUE that this is not the first time manufacturers or vendors have cooperated with users of a product in the furnishing of information on damaging properties. However, so wholesome is this attitude on the part of Johns-Manville Corporation that the hope is that it constitutes a new day for all manufacturers of materials that provide some threat to those manipulating them. Nothing is gained by efforts to conceal. Dangerous properties inevitably come to light in the process of use. Never is the attitude of industrial medicine to seek to bar the industrial application of any useful material. Instead, adequate control becomes the objective. The most unfortunate happenings are those in which damaged workers provide the first intimation of unwanted contents. The action of Johns-Manville Corporation provokes admiration.

Mass Responses

SINCE *mass* psychologic responses seemingly run only to such things as riots, panics and questionable strikes, one may pause to ponder the peculiar merits of the industrial physician's quiet counseling of individual workers as an essential of his daily ministrations. This is apropos of Dr. Weinberg's comments (page 351). The industrial physician's standing invitation to come in for counseling is never a "campaign," and is lacking in "pell-mell" implications. . . .

Counseling is as old as the human family. Believably, cave man harangued reluctant cave son as to his intentions about going out and slaying the hairy mammoth to build up the tribal meat pot. Medical counseling of industrial workers, and others, is a different thing. It requires techniques as exact as those for brain surgery. Probing the human mind as to motivations and psychologic defection is attended by as many pitfalls as probing human tissue for a bullet. Counseling of the industrial worker applied as a fine art in this period is of greater promise than any other of the innovations finding their way into industrial medical activities. In limited fashion, mass counseling yields some profits, as in calculated building up of plant morale, but, in the main, beneficial counseling is individualistic—the qualified physician, nurse or psychologist, sympathetically delving into the individual worker-mind, and in privacy.

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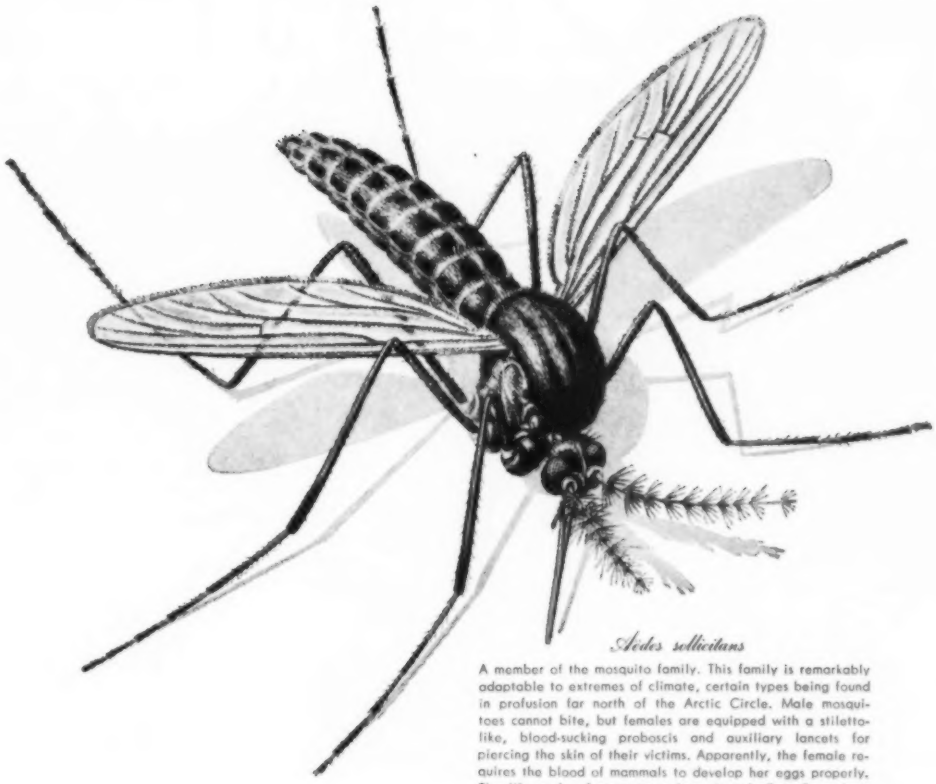

Aedes sollicitans

A member of the mosquito family. This family is remarkably adaptable to extremes of climate, certain types being found in profusion far north of the Arctic Circle. Male mosquitoes cannot bite, but females are equipped with a stiletto-like, blood-sucking proboscis and auxiliary lancets for piercing the skin of their victims. Apparently, the female requires the blood of mammals to develop her eggs properly. The life cycle of many mosquitoes is only 2 or 3 weeks – which is long enough, as far as most people are concerned.

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NEWS, COMMENT, OPINION

DID YOU ever have an obstinate cold—a six or seven weeks' unremitting chill and suspension of hope, fear, conscience, and everything? Yet do I try all I can to cure it; I try wine, and spirits, and smoking, and snuff, in unsparing quantities; but they only seem to make me worse instead of better. I sleep in a damp room, but it does me no good; I come late o' nights, but I do not find visible amendment." —Charles Lamb: *Letters.*

Fault-Finding Causes Neurotics

THE extremely critical, fault-finding supervisor will produce more than his share of neurotic individuals," writes Dr. G. E. Hobbs, of the University of Western Ontario, in the *Ontario Medical Review.* The neurotic person may complain of physical distress and his complaint is often recorded under the organ which appears to be giving him trouble instead of being attributed to the emotional factor that is the real cause. Dr. Hobbs reports that in one industry where functional nervous diseases were recorded as such, absenteeism from this factor ranked second only to the common cold.

—*Health,* May-June, 1952.

Examinations Required

EFFECTIVE next July 1, new Federal regulations raise the physical standards for truck, bus and taxicab drivers engaged in interstate commerce and require periodic physical examinations. The new requirements are announced by Interstate Commerce Commission in a general revision and tightening up of its safety code. The more important changes of interest to physicians include: (1) After January 1, 1954, *every driver must be physically re-examined at least once in three years;* currently only a pre-employment physical examination is required. Both employer and employee must have the physician's certificate available at all times. (2) Visual acuity of not less than 20/40 in each eye (with glasses) will be required of new men, but drivers now on the job may qualify under the current standard until January 1, 1954. (Current standard is 20/40 in one eye, 20/100 in the other. (3) The present requirement of "adequate hearing" will be supplanted by a definite measurement of hearing, which must be met without dependence on a hearing aid. It is estimated that a million or more truck, bus and taxicab drivers come under Interstate Commerce regulation. Details may be obtained from Interstate Commerce Commission, Washington, D.C.

Pennsylvania

JOSEPH SHILEN, M.D., Director of Pennsylvania's Bureau of Industrial Hygiene, summarizes the Bureau's activities during 1951 as follows: 10,806 visits were made to 8,333 industrial plants having a total of 1,678,755 employees. Included in these totals were engineering studies; medical consultive service; nursing consultant service; and dental consultive service. Chest x-ray surveys were made in 30 plants. Air pollution problems were investigated 138 times and involved 105 plants. A total of 1,553 recommendations regarding improved environmental conditions were made in 1,067 plants and involved 80,649 workers. It was found that 507 recommendations in 304 plants having 16,726 employees, had been carried out. During the year a total of 2,756 samples were collected for laboratory analysis or examination, and 3,751 field determinations of atmospheric contaminants were made. Chest x-rays taken and read totaled 13,145, and 457 dental x-rays were taken and read. A total of 261 dental examinations were made during the year.

—*Waynesboro Record Herald,* May 22, 1952.

Nothing New Under the Sun

TRULY, there is little or nothing new under the sun. Of late, the conception of alcoholism as an illness has gained great vogue and indeed has virtually assumed the stature of a newly fledged dogma. It is therefore a bit surprising to be told by H. Pullar-Strecker (*Lancet,* March 15, 1952) that nearly 2,000 years ago the Roman lawyer Ulpian (A.D. 170-228) urged that alcoholics should be treated as sick people. In the course of the centuries

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thereafter the conception can hardly be said to have gained ground, but suddenly in America Dr. Joseph Turner appeared, preaching the new-old truth like an evangelist and actually founding at Binghamton in New York State the first institution for inebriates! The modern gospel dates definitely from Turner.

—*Medical Times*, June, 1952.

"Free" Medicine

IN A study of "free" medicine as it exists in England, *U. S. News & World Report* finds that 86% of the annual cost is being met from general taxes, a charge totaling more than $1 billion a year. Whatever its merits, a system whereby A's medical bills are paid from taxes on B, C and D is properly described by the term "socialized medicine."

—*Chicago Tribune*, May 29, 1952.

Noise Abatement Symposium

THE third annual National Noise Abatement Symposium will be held October 10 at Armour Research Foundation of Illinois Institute of Technology. The Symposium will feature seven talks on various aspects of the noise problem by experts on the control, measurement, and effects of noise. Sponsors of last year's meeting were the Acoustical Society of America, the National Research Council, the National Noise Abatement Council, and the Foundation. Daniel B. Callaway, supervisor of sound and vibration control at the Foundation, is chairman of the program committee for the meeting.

Chicago Sirens

ARMOUR scientists headed by Dr. Howard C. Hardy made a study, as a public service, of the siren situation. In heavily-populated areas, they found, it takes about 96 decibels of sound to stir the populace. In residential areas 80 decibels can send you diving for your bombproof shelter. Sirens will be located in some 50 to 60 areas so that Chicago will have the best air raid warning system in the country. So quit worrying, you'll always have time to duck! (Aside): The decibel, or noise rating at Madison and State is the highest in Chicago, and maybe anywhere outside of a boiler shop. It rates 100 decibels, which could drive you batty in an hour or so.

—From "The Town Crier," TONY WEITZEL'S column in *Chicago Daily News*.

The Accident-Prone

ACCIDENT-proneness in adults is more common in the 16- to 25-year age group. Their reaction time is normal but there is a characteristic inattention, probably due to fatigue, neuroses, or phobia which draws the attention away from the problem on hand. These people are impulsive and react with action rather than thought. As children, they resent parental authority, run away from home; they lie and steal. Eneuresis, nailbiting and truancy are

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common. Strict parental authority and rebellion against the same are often found. They like adventure, excitement and action. The behavior of these accident-makers is often identical in character with that of the juvenile delinquent and adult criminal. These people usually interrupt their educations before completion. They change jobs frequently and refuse to work for indefinite periods. They are often extroverts, like to be with people, and are well-liked. They enjoy athletic sports and often take part actively in them. They are usually "on the go." They resent authority and avoid responsibility. An accident to them brings about dependence and compensation either in the form of sympathy or financial returns, and while it is practically impossible to detect these "accident-prone" individuals before they have their accident, who has a better opportunity to correlate the accident and the personality than the family doctor?

—From "The General Practitioner's Obligation to Industrial Medicine," by EDWIN MATLIN, M.D., in *American Practitioner*, June, 1952.

The Facts of Life

WE HAVE heard much lately of the lack of pharmaceutical training in the medical schools. What of the equally appalling lack of economic education? The intern must be taught that his history is vital not only for diagnosis and diagnostic teaching, but more and more often now, to the adjudging of financial liability as well. Again we are back to the practitioner, for in his hands lies the training of the young doctor. If the intern is to be taught to think in a logical sequential order, dates are all-important and if the insurance adjuster is to be able to determine whether onset of illness preceded coverage, he must have those dates. "A year ago" must really mean 52 weeks before; "several months" can mean nothing but mental laziness. Each new group of interns should receive instructions not only in the medical methods of their institution, but someone from the business office should likewise have a talk with the boys and point out the relationship between physicians and the medical expense agencies, as well as other economic facts of life.

—From "Responsibility of the Physician to the Insurance Company," by ELLIS M. MARKELL, M.D., in *Westchester Med. Bull.*, June, 1952.

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Age and Diet

A FEW old persons are overweight and continue to derive pleasure from food. Others lose weight and appetite and adopt diets—by convenience, accident or poverty—that may be poorly balanced or deficient; sometimes these diets are evident causes of poor health. In still others the diet may seem meager, but no ill effects are apparent and the subject can hardly be persuaded to make changes. One is reminded of the article written many years ago by the late Dr. Alfred Worcester denouncing the cruelty of trying to force old persons to eat more than they wish or are able to. By and large, the precision with which the food intake is adjusted to requirements is remarkable. The rarity of obese persons past 65 is a grim reminder of the wages of dietary over-indulgence.

—From an Editorial, "Food for the Aged," in *New England J. Med.*, 246:15 (April 10) 1952.

Cooperative Dispensary

HOW SMALL PLANTS may cooperate to provide an efficient dispensary and public health service for their employees is illustrated by the Petrie Clinic in Atlanta. The idea developed after an infected scratch had caused a worker to be hospitalized and compensation payments had cost his employer $3,000. Deciding that he could not afford to be without the health and safety programs existing in larger companies, this employer approached top men in neighboring plants. As a result, a cooperative program for health maintenance was initiated, involving the opening of a clinic housed in two basement rooms in a gymnasium conveniently lo-

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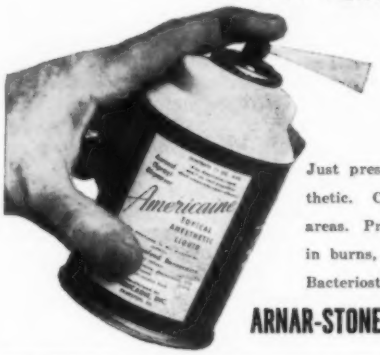

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cated to the three plants concerned. The staff comprises a doctor, who spends from 1:30 to 4:30 each afternoon at the clinic, and a nurse, who puts in one hour each day in the first-aid room of each of the three plants and who spends five hours a day at the clinic. Though the three cooperating plants employ less than 800, the clinic in the first six months took care of 979 new cases, of which 591 were the result of work situations. There were also 1,347 revisits. Seventy applicants for employment were examined, and a plan was put into effect for annual physical check-ups. It cost less than one dollar per month per employee to operate the clinic for the first three months, including initial equipment.

—*Dun's Review*, November, 1951, quoted in *Management Review*, May, 1952.

"Free" Dental Service

AN AREA Medical Director for the welfare fund of the United Mine Workers disclosed that free dental service has been discontinued to miners and their families. Dr. Leslie A. Falk said the fund has been hit too hard by applicants for dental aid. He also reported the fund has shut off payments for removal of tonsils and adenoids.

—AP from Pittsburgh, June 1.

Beware the ILO

WILLIAM L. MCGRATH, Cincinnati manufacturer and member of the United States delegation to the ILO conference next month in Geneva, appeared before a Senate judiciary subcommittee, May 28, and accused the ILO of plotting socialistic treaties which would destroy domestic legislation and freedoms in the United States. He testified in support of a proposed constitutional amendment introduced by Sen. Bricker (R., O.) and others to protect American rights guaranteed by the Constitution against violation by the U. N., or other international organizations, treaties, or agreements. MCGRATH has attended the ILO conference the last four years as a member of the United States delegation. "I think the American public would be aghast if it understood the implications in this situation," he testified. "If people realized the facts, they would be indignant at the idea that foreign socialists, sitting in Geneva, could, in fact, formulate domestic laws for the United States. As an arm of the United Nations, the ILO passes conventions which, when ratified by member countries, become international treaties among the countries which ratify them; thereby, under our Constitution as it stands today, becoming, if we ratify them, the law of the land and taking precedence over all other existing Federal or state laws. The fact is that the ILO has gone far beyond the field of labor, and is seeking to set itself up as a sort of international legislature to formulate uniform domestic socialistic laws which it hopes, by the vehicle of treaty ratification, can eventually be imposed upon most of the countries of the world. The

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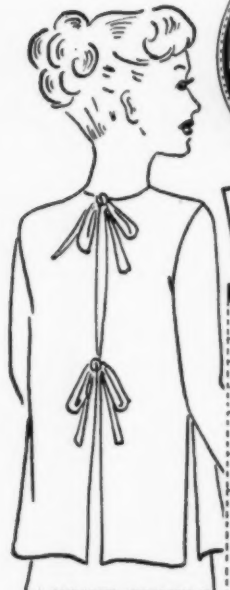
ILO seeks to inject the principle of internationalism into domestic legislation and destroy the principle of local self government." He said the conference last year approved a recommendation on collective bargaining agreements, which if ratified by the United States would nullify the Taft-Hartley law. "If this became law, government could decree industry-wide bargaining in any industry, and then step in and take over the negotiations. That would not only be the end of free collective bargaining—it would inevitably lead to government control of prices and wages and constitute a vital step toward the establishment of a socialist planned economy. There will be passed at the forthcoming ILO conference a convention entitled 'minimum standards of social security.' This is a draft of an international law proposing practically every type of social security of which human imagination can conceive, including socialized medicine, and a provision for a 5% increase in family income for every child born after the first. If a man is sick, or laid off, or grows old, or cuts his little finger, or his wife has a baby—or even if he has what is called a 'morbid condition'—he gets money from the government. There is hardly a contingency in all human experience for which government would not pay him something. This convention is a complete blueprint for the welfare state. It is an absolute denial of the philosophy of self-reliance, independence, and opportunity; and its financing would require a complete reconstruction of the economy of any country adopting it."

—*Chicago Tribune*, May 29, 1952.

Dealing With the Press

PIERRE FRALEY, science writer for the *Philadelphia Evening Bulletin*, at a forum attended by doctors, nurses and students at Woman's Medical College of Pennsylvania, in May, said that the medical profession's code in dealing with the press is "static, rigid, and so hopelessly rooted in the past that it's completely obsolete. Nothing has been so breath-taking as the rate of medical progress in the past 50 years. New insight into how the body acts and reacts in sickness and in health is being gained almost daily. The general care of patients is the finest in the world—but the ironic thing is that the doctor himself is in disrepute. Many doctors have in-group psychology. They feel apart from the general public—that they must stick together—and the public be damned so far as news is concerned. While the medical sciences have been advancing so rapidly, the social sciences, aiding groups of people to get on with each other, have moved forward, too, but at a slower rate. The medical profession has studiously avoided finding out what are the techniques of mutual understanding. The profession must learn to tell the public what it is doing and why it is doing it. It must learn to put its best foot—not its worst—forward in dealing with the press. This, in my opinion, it is expressly forbidden to do under its interpretation of the present code of ethics."

—News Release.



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